11-1520-221-20

TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE MANUAL

FOR

ELECTRONIC EQUIPMENT CONFIGURATIONS ARMY MODEL AH-1G HELICOPTER

This copy is a reprint which includes current pages from Changes 1 - 4

HEADQUARTERS, DEPARTMENT OF THE ARMY

FEBRUARY 1971

D 101.11:

READEX FICHE best copy available

WARNINGS

DANGEROUS CHEMICALS ARE USED IN NICKEL-CADMIUM BATTERIES

- The electrolyte used in nickel-cadmium batteries contains potassium hydroxide (KOH), which is a caustic chemical agent. Serious and deep burns of the body tissue will result if the electrolyte comes in contact with the eyes or any part of the body. Use rubber gloves, rubber apron, and protective eye covering when handling the battery. If accidental contact with the electrolyte is made, use ONLY clean water and immediately (seconds count) flush contaminated areas. Continue flushing with large quantities of clean water. Seek medical attention immediately. Before removing or installing the battery, be sure that the aircraft battery switch is off and the battery, if overheated, has cooled down. Removal or reconnection of the battery connector while the battery is under load may result in explosion, electrical arching, and possible severe burns to personnel.
- Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with the skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

DANGEROUS VOLTAGES

EXIST IN THESE CONFIGURATIONS

- Be careful when working on the 115-volt ac output circuits of the inverters.

DEATH ON CONTACT

MAY RESULT IF SAFETY PRECAUTIONS ARE NOT OBSERVED

- Be careful not to come in contact with or close proximity to high-voltage connections or any power connections when using the equipment. Turn off the power and discharge all high-voltage capacitors before making any connections or doing any work inside the equipment. Voltages as high as 1,500 volts dc are present in these configurations.

RF BURNS

- Do not touch or stand too close to radiating antennas. Serious RF burns may result. Move away from antenna or transmitting equipment if any part of the body area feels flushed.

CAUTION

- Take every possible step to keep the nickel-cadmium battery as far away as possible from the lead-acid type of battery. Do not use the same tools and materials (screwdrivers, wrenches, gloves, apron, etc.) for both types of batteries. Anything associated with the lead-acid battery, even air, must never come in contact with the nickel-cadmium battery or its electrolyte. Even a trace of sulfuric acid fumes from a lead-acid battery could result in damage to the nickel-cadmium battery. If sulfuric acid has been inadvertently mixed with the electrolyte in the battery, the upper areas of the cells will appear greenish in color. In such cases, the battery must be replaced.
- The PP-7274(*)/A was procured with a two-year contractor's warranty. If a PP-7274(*)/A is defective, check the warranty data plate located on the unit. If the date stamped on the data plate is within two years of the current date, the unit must be returned to the contractor in accordance with instructions given on the data plate. If the date is over two years old, return the unit to the appropriate repair unit as listed in the maintenance allocation chart (MAC) (appx B).

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1. DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL
2. IF POSSIBLE , TURN OFF THE ELECTRICAL POWER
3. IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A WOODEN POLE OR A ROPE OR SOME OTHER INSULATING MATERIAL
4. SEND FOR HELP AS SOON AS POSSIBLE
5. AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION

TM 11-1520-221-20
C 4

Change No. 4

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *23 April 1982*

Organizational Maintenance Manual

ELECTRONIC EQUIPMENT CONFIGURATIONS ARMY MODELS AH-1G (NSN 1520-00-999-9821), AH-1Q (NSN 1520-00-009-3488), AND AH-1S (NSN 1520-00-504-9112) (MOD) HELICOPTERS

TM 11-1520-221-20, 22 February 1971, is changed as follows:

1. Title of manual is changed as above.
2. New or changed material is indicated by a vertical bar in the margin of the page.
3. Added or revised illustrations are indicated by a vertical bar in front of the figure caption.
4. Remove pages and insert pages as indicated below.

Remove	*Insert*
Warning page	Warning pages A, B, and C
i/(ii blank)	i/(ii blank)
1-1 through 1-4.1/(1-4.2 blank)	1-1 through 1-4.2
1-7 and 1-8	1-7 and 1-8
1-13 and 1-14	1-13 and 1-14
1-17/(1-18 blank)	1-17/(1-18 blank)
2-1 through 2-6	2-1 through 2-6
2-9 and 2-10	2-9 and 2-10
2-17 through 2-20	2-17 through 2-20.
2-23 through 2-26	2-23 through 2-26
None	2-40.1/(2-40.2 blank)
2-47 through 2-48.2	2-47 through 2-48.2
A-1 and A-2	A-1 and A-2

5. On figure 9.1, at the splice above C-7197/ARC-134, reverse the numbers of the ARC134-29A22 and ARC134-29A22 wires.
6. File this change sheet in front of the publication for reference purposes.

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

Official:

ROBERT M. JOYCE
Brigadier General, United States Army
The Adjutant General

Distribution:

To be distributed in accordance with DA Form 12-31, Organizational Maintenance requirements for AH-1G aircraft, AH-1S (MOD).

Technical Manual
No. 11-1520-221-20

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., *22 February 1971*

Organizational Maintenance Manual

ELECTRONIC EQUIPMENT CONFIGURATIONS ARMY MODELS AH-1G (NSN 1520-00-999-9821), AH-1Q (NSN 1520-00-009-3488) And AH-1S (NSN 1520-00-504-9112) (MOD) HELICOPTERS

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* This manual supersedes TM 11-1520-221-20, 30 March 1967, including all changes.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual covers organizational maintenance (AVUM) of the electronic equipment configurations for Army Model AH-1G, AH-1Q, and AH-1S (mod) helicopters, serial numbers 66-15249 through 66-15357, 67-15450 through 67-15869, 68-15000 through 68-15213, 68-17020 through 68-17113, 69-16410 through 69-16447, 70-15936 through 70-16105 and 71-19001 and subsequent helicopters that have been retrofitted in accordance with MWO's 55-1520-221-20/5, 55-1520-221-20/7, 55-1520-221-20/9, 55-1520-221-30/1, 55-1520-221-30/12, 55-1520-221-30/13, 55-1520-221-30/17, 55-1520-221-20/26, 55-1520-221-30/36, 55-1520-221-30-49, and 11-1520-1520-221-50-1.

b. This manual also includes instructions for organizational maintenance personnel to perform periodic preventive maintenance and troubleshooting procedures for electronic communications and navigational equipment when the equipment is installed in the helicopter. This manual also list tools and test equipment required by organizational maintenance personnel to maintain the configuration. TM 11-1520-221-20P contains the repair parts and special tools lists.

c. Operating instructions are contained in TM 55-1520-221-10 and TM 55-1520-234-10. This manual supplements TM 55-1520-221-10, TM 55-1520-221-23-1, TM 55-1520-221-23-2, TM 55-1520-221-CL, TM 55-1520-234-10, TM 55-1520-234-23-1, TM 55-1520-234-23-2, and TM 55-1520-234-CL to provide organizational maintenance (AVUM) instructions. Some of the electronic equipment used in this configuration are covered in detail in other manuals; the pertinent manuals are listed in appendix A. When servicing these components independent of the helicopter, refer to the applicable manual for detailed troubleshooting procedures and for replacing and repairing maintenance parts.

d. Equipment nomenclature containing an asterisk is used to indicate all models of an equipment item covered in this manual; thus, Control, Intercommunication Set C-1611(*)/AIC represents Control, Intercommunication Sets C-1611A/AIC, C-1611B/AIC, C-1611C/AIC, and C-1611D/AIC; Receiver-Transmitter, Radio RT-742(*)ARC-51BX represents Receiver-Transmitters, Radio RT-742/ARC-51BX, RT-742B/ARC-51BX, and RT-742C/ARC-51BX.

e. Maintenance of Army aircraft is transitioning to three categories of maintenance. These maintenance categories are Aviation Unit Maintenance (AVUM); Aviation Intermediate Maintenance (AVIM); and Depot Maintenance. AVUM and AVIM will replace organizational, direct support, and general support maintenance. In the interim, as maintenance units are reorganized into three categories of maintenance activities, this publication will be used by AVUM or organizational maintenance personnel for the maintenance of the electronic equipment configuration. The maintenance allocation chart (MAC) in appendix B is configured to the three category maintenance concept where the code O represents AVUM; the code F represents AVIM and D represents depot maintenance. Those organizations not yet assigned complete AVUM responsibilities should use caution in utilization of this publication. Whatever maintenance is performed must consider available skills, tools, test equipment, and time required to perform the maintenance.

f. Throughout this manual, the following terms are used:

(1) *Configuration* includes all basic electronic equipment and electronic installation items.

(2) *Basic electronic* denotes government-furnished equipment for which there are Department of the Army publications covering detailed maintenance instructions.

(3) *Electronic installation* items denote items furnished by the airframe manufacturer for which there are no offical publications covering detailed maintenance instructions.

(4) *System* denotes a major subdivision of the configuration; for example, communications system.

(5) *Facility* denotes a group of components that are interrelated to perform a function or service; for

example, ultra high frequency (uhf) amplitude modulation (am) facility.

(6) *Component* denotes an individual item of a facility; for example, uhf receiver-transmitter.

g. Block diagram discussions of the configuration, basic electronic equipment, and installation items are covered in chapter 3.

1-2. Index of Technical Publications

Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

1-3. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750. The Army Maintenance Management System (Army).

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73/AFR 400-54/MCO 4430.3E.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18/MCO P4610.19C/DLAR 4500.15.

1-3.1. Reporting Errors and Recommending Improvements

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to: Commander, US Army Communications-Electronics Command, ATTN: DRSEL-ME-MQ, For Monmouth, NJ 07703. In either case, a reply will be furnished direct to you.

1-3.2. Administrative Storage

Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness.

1-3.3 Reporting Equipment Improvement Recommendations (EIR)

If your equipment needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. We'll send you a reply.

1-3.4. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

Section II. DESCRIPTION OF CONFIGURATION AND ELECTRONIC EQUIPMENT

1-4. Configuration and Serial Numbers

Configuration	*Army model*	*Helicopter serial number*
A	AH-1G	66-15249 through 66-15257
B	AH-1G	66-15258 through 66-15357
C	AH-1G	67-15450 through 67-15869
D	AH-1G	68-15000 through 68-17113
		69-16410 through 69-16447
E	AH-1G	70-15936 through 70-16105
F	AH-1Q	68-15146
		68-15127
		68-15052
		68-15096
		68-15209
		70-15942
		68-17048
		68-15091
		68-17077
		68-15203

Configuration	*Army model*	*Helicopter serial number*
		68-15053
		70-16090
		70-16072
		68-15130
		68-15088
		68-15126
		70-16105
		70-15977
		68-15035
		68-15210
F	AH-1S (MOD)	68-15049
		68-17055
		68-15013
		68-15029
		71-20999
		68-15179
		68-15144
		68-15156
		68-15014
		71-21048
		71-21041
		68-15051
		68-17054
		71-21052
		68-15139
		70-15973
		68-15189
		68-17024
		70-15976
		68-15178
		68-15067
		68-17071

NOTE

AH-1Q configurations are the same as configurations A, B, C, D or E except for component locations and the main inverter. See paragraph 1-7*e*, and figure 1-3.1.

1-5. Facilities and Electronic Equipment

The charts in *a*, *b*, *c*, *d*, *e*, and *f* below list each operational facility provided in the different configurations of Helicopters, Army Model AH-1G and AH-1Q and AH-IS (mod) (para 1-4). The charts list all electronic euqipment components used for each facility indicated in the *Equipment or component* column. A letter X in the *Configuration* column indicates that the particular component is installed in the helicopter. A letter Y in the *Configuration* column indicates that complete facilities for the component are provided but the component is not installed. These facilities provide easy installation of the component when required for a special geographical location or mission application. A letter Z in the *Configuration* column indicates that only adequate space, weight, and power for a specific component are provided. Therefore, a retrofit or modification program will be required to add this component.

a. Communications (figs. 1-1, 1-2, 1-3, and 1-7).

Facility	Equipment or component	Common name	Configuration					
			A	B	C	D	E	F
Interphone and audio	Control, Intercommunications Set C-1611(*)/AIC (2 installed).	Interphone control	X	X	X	X	X	X
	Microphone Switch (cyclic) (2 installed)		X	X	X	X	X	X
	Microphone Switch SA-47A/AIC	Foot switch	X	X	X	X	X	X
	Impedance Matching Network P/N 209-075-235.		X	X	X	X	X	X
	Printed circuit board P/N 209-075-246.		X	X	X	X	X	X
	Control, Intercommunications Set C-6533/AIC (2).	Ics control panel	Z	Z	Z	Z	Z	Z
	Discriminator, Discrete Signal MD-736/A		-	-	-	X	X	X
Fm liaison	Radio Set AN/ARC-54 or AN/ARC-131	Fm command radio	X	X	X	X	X	X
	Receiver-Transmitter, Radio RT-348/ARC-54 or RT-828/ARC-131.							
	Mounting MT-1535/ARC-54 or MT-3664/ARC-131.	Radio set mount	X	X	X	X	X	X
	Control, Radio Set C-3835/ARC-54 or C-7068/ARC-131.	Fm control panel	X	X	X	X	X	X
	Kit, Connector 5935-695-4914	Connector kit	X	X	X	X	X	X
	Indicator ID-48/ARN	Course indicator	X	X	X	X	X	X
	Antenna, Communication AS-2285/ARC.	Fm communication antenna.	X	X	X	X	X	X
	Antenna homing (lead foil) or antenna P/N 209-075-292.	Homing antenna	X	X	X	X	X	X
	Communications Security Equipment TSEC/KY-28.	Voice security equipment	Y	Y	Y	Y	Y	Y
	Radio Set AN/ARC-114	Vhf-fm radio set	Z	Z	Z	Z	Z	Z
	Control Indicator C-8157/ARC	Voice security control panel.	-	-	-	Y	Y	Y
Uhf command	Radio Set AN/ARC-51BX		X	X	X	X	X	X
	Receiver-Transmitter, Radio RT-742(*)/51BX.	Uhf command radio	X	X	X	X	X	X
	Mounting MT-2653/ARC		X	X	X	X	X	X
	Control, Radio Set C-6287/ARC-51BX	Uhf control panel	X	X	X	X	X	X
	Cooler, Air, Electronic Equipment HD-615/ARC-51X.	External blower	X	X	X	X	X	X
	Indicator, Standing Wave Ratio ID-1003/ARC.	Reflectometer	X	X	X	X	X	X
	Antenna AT-1108/ARC	Uhf-vhf antenna	X	X	X	X	X	X
	Radio Set AN/ARC-116	Uhf command radio	Z	Z	Z	Z	Z	Z
Vhf command	Radio Set AN/ARC-134	Vhf radio	X	X	X	X	X	X
	Receiver-Transmitter Radio RT-857/ARC-134.	Vhf command radio	X	X	X	X	X	X
	Mounting MT-3791/ARC-134		X	X	X	X	X	X
	Control, Radio Set C-7197/ARC-134	Vhf radio control	X	X	X	X	X	X
	Antenna AT-1108/ARC	Uhf-vhf antenna	X	X	X	X	X	X
	Radio Set AN/ARC-115	Vhf command radio	Z	Z	Z	Z	Z	Z

b. Navigation (fig. 1-4 through 1-7).

Facility	Equipment or component	Common name	Configuration					
			A	B	C	D	E	F
Automatic direction finding (adf).	Direction Finder Set AN/ARN-83	Adf set	X	X	X	X	X	X
	Radio Receiver R-1391/ARN-83	Adf receiver	X	X	X	X	X	X
	Mounting MT-3605/ARN-83		X	X	X	X	X	X
	Direction Finder Control C-6899/ARC-83.	ADf control	X	X	X	X	X	X
	Antenna, Loop Type 137A-7	Loop antenna	X	X	X	X	X	X
	Antenna, Sense P/N 209-030-133		X	X	X	X	X	X
Gyromagnetic compass system.	Direction Finder Set AN/ARN-89	Adf set	Z	Z	Z	Z	Z	Z
	Gyromagnetic Compass Set AN/ASN-43	Compass set	X	X	X	X	X	X
	Transmitter, Induction Compass T-611/ASN.	Flux valve	Z	Z	Z	Z	Z	Z
	Compensator, Magnetic Flux CN-405/ASN.		X	X	X	X	X	X
	Directional Gyroscope CN-998/ASN-43		X	X	X	X	X	X

Facility	Equipment or component	Common name	Configuration A	B	C	D	E	F
	Indicator, Radio-Magnetic Compass ID-998/ASN.	Radio compass	X	X	X	X	X	X
	Indicator, Course ID-250/ARN	Course indicator	X	X	X	X	X	X
	Amplifier, Electronic Control AM-3209/ASN.		X	X	X	X	X	X
	Gyroscope, Vertical Displacement CN-1314/A.		Z	Z	Z	X	X	X
	Rate Switching Gyroscope MC-1	Rate switch gyro	Z	Z	Z	X	X	X

c. Identification (fig. 1-4 through 1-7).

Facility	Equipment or component	Common name	Configuration A	B	C	D	E	F
Iff system	Transponder Set AN/APX-44	Iff transponder set	X	X	X		-	-
NOTE AN/APX-44 is replaced by AN/APX-72 on helicopters having MWO 55-1520-221-50/13 accomplished.	Receiver-Transmitter, Radar RT-494/APX-44.		X	X	X		-	-
	Control, Transponder Set C-2714/APX-44.	Transponder control	X	X	X		-	-
	Mounting MT-2100/APX-44		X	X	X		-	-
	Antenna AT-884/APX-44		X	X	X		-	-
	Transponder Set AN/APX-72	Iff transponder radio	Y	Y	Y	X	X	X
	Receiver-Transmitter, Radar RT-859/APX-72.							
	Test Set, Transponder TS-1843/APX	Inflight test set	Y	Y	Y	Y	Y	Y
	Computer Kit 1A/TSEC	Transponder computer	Y	Y	Y	Y	Y	Y
	Control, Transponder Set C-6220A(P)/APX	Transponder control	Y	Y	Y	X	X	X

d. Stability and Control Augmentation System Model 570A (SCAS).

Facility	Equipment or component	Common name	Configuration A	B	C	D	E	F
Stability and control augmentation system.	SCAS Control Panel P/N 570-074-060		X	X	X	X	X	X
	SCAS Sensor Amplifier Unit P/N 570-074-010.		X	X	X	X	X	X
	Pylon Compensation Unit P/N 570-074-131.	PCU	X	X	X	X	X	X

e. Power Source.

NOTE

Main dc source is 204-060-200 Starter Generator.

Facility	Equipment or component	Common name	Configuration A	B	C	D	E	F
Dc source	Battery BB-432/A or BB-649/A		X	X	X	X	X	X
Ac source	Motor Generator PU-542(A)/A or PU-542(*)/A.	Main inverter	X	X	X	X	X	Stby
Ac source	Inverter, Power, Static PP-7274(*)/A	Main inverter						X
Standby ac source	Inverter, Power, Static PP-6508/U (P/N 209-075-213-3).	Standby inverter	X	X	X	X	X	

f. Proximity Warning Facility.

Facility	Equipment or component	Common name	Configuration A	B	C	D	E	F
Proximity Warning Facility YG-1054	Receiver-Transponder		Y	Y	Y	Y	Y	Y
	Antenna		Y	Y	Y	Y	Y	Y

g. Radar Warning (fig. 1-6.1).

Facility	Equipment or component	Common name	Configuration					
			A	B	C	D	E	F
Radar warning system	Control Panel, Radar Warning C-9336/APR-39		Y	Y	Y	Y	Y	Y
NOTE All repair of these components is the logistic responsibility of ASA.	Indicator, Radar Warning ID-1150/APR-39		Y	Y	Y	Y	Y	Y
	Comparator, Radar Warning CM-440/APR-39		Y	Y	Y	Y	Y	Y
	Receiver, Radar Warning R-1838/APR-39		Y	Y	Y	Y	Y	Y
	Antenna, Blade AS-2890/APR-39		Y	Y	Y	Y	Y	Y
	Antenna, Spiral AS-2891/APR-39		Y	Y	Y	Y	Y	Y
	Antenna, Spiral AS-2892/APR-39		Y	Y	Y	Y	Y	Y

1-6. Differences in Electronic Equipment Models

a. Control Intercommunications Set C-1611(*)/AIC. Control, Intercommunication Sets C-1611A/AIC through C-1611D/AIC are readily interchangeable and require no changes in the associated equipment regardless of the unit installed. Control, Intercommunication Sets C-1611A/AIC through C-1611D/AIC are similar electrically and physically. These similarities are described in TM 11-5831-201-20.

b. Radio Set AN/ARC-51BX. Radio Sets AN/ARC-51BX and AN/ARC-51X differ electrically as indicated in TM 11-5820-518-20, and are not interchangeable.

c. Radio Set AN/ARC-131. Radio Set AN/ARC-131 may be installed in lieu of Radio Set AN/ARC-54. References to Radio Set AN/ARC-54 in the manual also apply to Radio Set AN/ARC-131.

d. Helicopters having MWO 55-1520-221-20/5 accomplished (configurations A, serial numbers 66-15249 through 66-15257; B, serial numbers 66-15258 through 66-15357 and C, serial numbers 67-15450 through 67-15869) have improved ground crew ICS connectors installed (fig. 3-12).

e. Helicopters having MWO 55-1520-221-20/7 accomplished (configurations A, serial numbers 66-15249 through 66-15257; B, serial numbers 66-15258 through 66-15357 and C, serial numbers 67-15450 through 67-15533) are equipped with guadrantal error corrector and improved coaxial cable for the AN/ARN-83 Direction Finder Set.

f. Helicopters having MWO 55-1520-221-30/13 accomplished (configurations A, serial numbers 66-15249 through 66-15257; B, serial numbers 66-15258 through 66-15268, 66-15270 through 66-15357; C, serial numbers 67-15450 through 67-15468, 67-15470 through 67-15869 and D, serial numbers 68-15000 through 68-15213, 68-17020 through 68-17113 and 9-16410 through 69-16447) are equipped with updated provisions for the AN/APX-72 Transponder Set (fig. FO-13.1).

g. Helicopters having MWO 55-1520-221-30/17 accomplished (configurations A, serial numbers 66-15249 through 66-15257; B, serial numbers 66-15258 through 66-15357; C, serial numbers 67-15450 through 67-15869 and D, serial numbers 68-15000 through 68-15052) relocate the fm communication antenna and the uhf-vhf antenna (fig. 1-7).

h. Helicopters having MWO 55-1520-221-30/36 accomplished are equipped with complete provisions for the KY-28 Voice Security System (fig. FO-15 and FO-16). The following helicopters, listed by serial numbers, incorporate these provisions:

67-15451 through 67-15469
67-15472
67-15474 through 67-15488
67-15490 through 67-15497
67-15500 through 67-15612
67-15614 through 67-15622
67-15624 through 67-15657
67-15660
67-15662 through 67-15740
67-15742 through 67-15869
68-15000 through 68-15180
68-15182 through 68-15213
68-17020 through 68-17113
69-16410 through 69-16447

1-7. Equipment Description

a. Impedance Matching Network P/N 209-075-235 (fig. 1-8).

(1) The impedance matching network is located on the right side of the pilot's station. It is a printed circuit board containing a relay and network circuitry. This assembly matches various signals between related receivers and transmitters. It also serves as a coupler for all distribution panels in the interphone facility.

(2) The impedance matching network is rigidly mounted on the impedance network assembly support. The impedance matching circuit board makes external connection and is easily replaced.

b. Ground Crew Ics Stations and Components (fig. 1-1, 1-2 and 1-3). External interphone connections are provided at the tip of each wing to enable maintenance personnel on the ground to communicate with personnel inside the helicopter. Two relays (K27 right side and K28 left side, figure FO-3, FO-4, FO-5 and FO-5.1) are incorporated in the system to provide a path for the audio signal from the external ground station to helicopter interphone system. The relay is energized when the external ground station microphone button is depressed. The audio signal from the external ground station is routed to the helicopter interphone system. Helicopters having MWO 55-1520-221-20/5 have improved ground crew Ics connectors installed (fig. 3-12).

c. Attitude Indicator System (Effective Helicopters 68-15000, and Subsequent). This is a Dual Remote indicating system (fig. 2-4) and includes a pilot's attitude indicator (M35), a gunner's attitude indicator (M36), a rate switch gyro, and separately mounted attitude gyro. The system is supplied from the 115-vac bus (fig. 3-9). Synchro output signals (pitch and roll) from the attitude gyro are applied to the pilot and gunners attitude indicators. The switch gyro is provided to disable the vertical gyro erection circuit during turns to prevent correction to a false gravity vertical. The pilot's and gunner's attitude indicators, mounted in the respective instrument panels, display flight attitude of the helicopter relative to the earth. Pitch attitude is indicated by motion of the sphere with respect to the miniature airplane. Roll attitude is indicated by motion of the roll pointer with respect to the fixed roll scale located at the top of the display. The indicator sphere can be adjusted to zero indication by the pitch trim knob which is located on the face of the instrument in the lower right-hand corner, and a roll trim control located at the rear of the instrument. The power OFF flag, located in the lower left hand portion of the display, is energized (out of view) by a tap on the power transformer. Any interruption of indicator power will indicate a failure and the flag will be exposed.

d. Ac Power System (Effective 66-15249 Through 66-15357 and 67-15450 Through 69-16447) (fig. 3-10). This system consists of main inverter (MG1), standby inverter (MG2), an inverter transfer relay (K9), and AC failure relay (K10), and power factor correction capacitor (C2). Circuit breakers, serving as ON-OFF power links and circuit protectors, consist of a 15-ampere INVERTER MAIN, a 7.5-ampere INVERTER STANDBY both of which are located

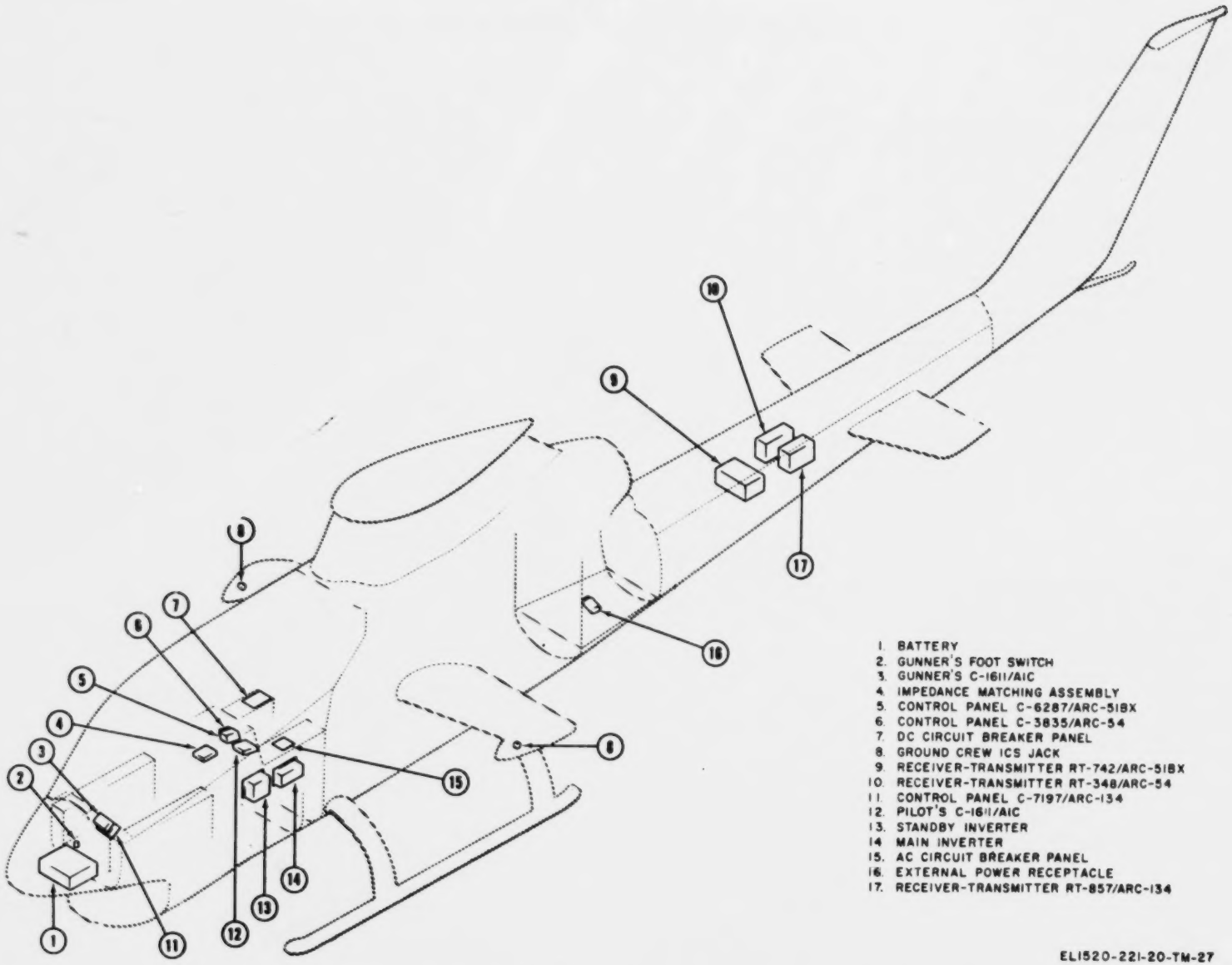


Figure 1–1. Communication and power equipment, configurations A and B.

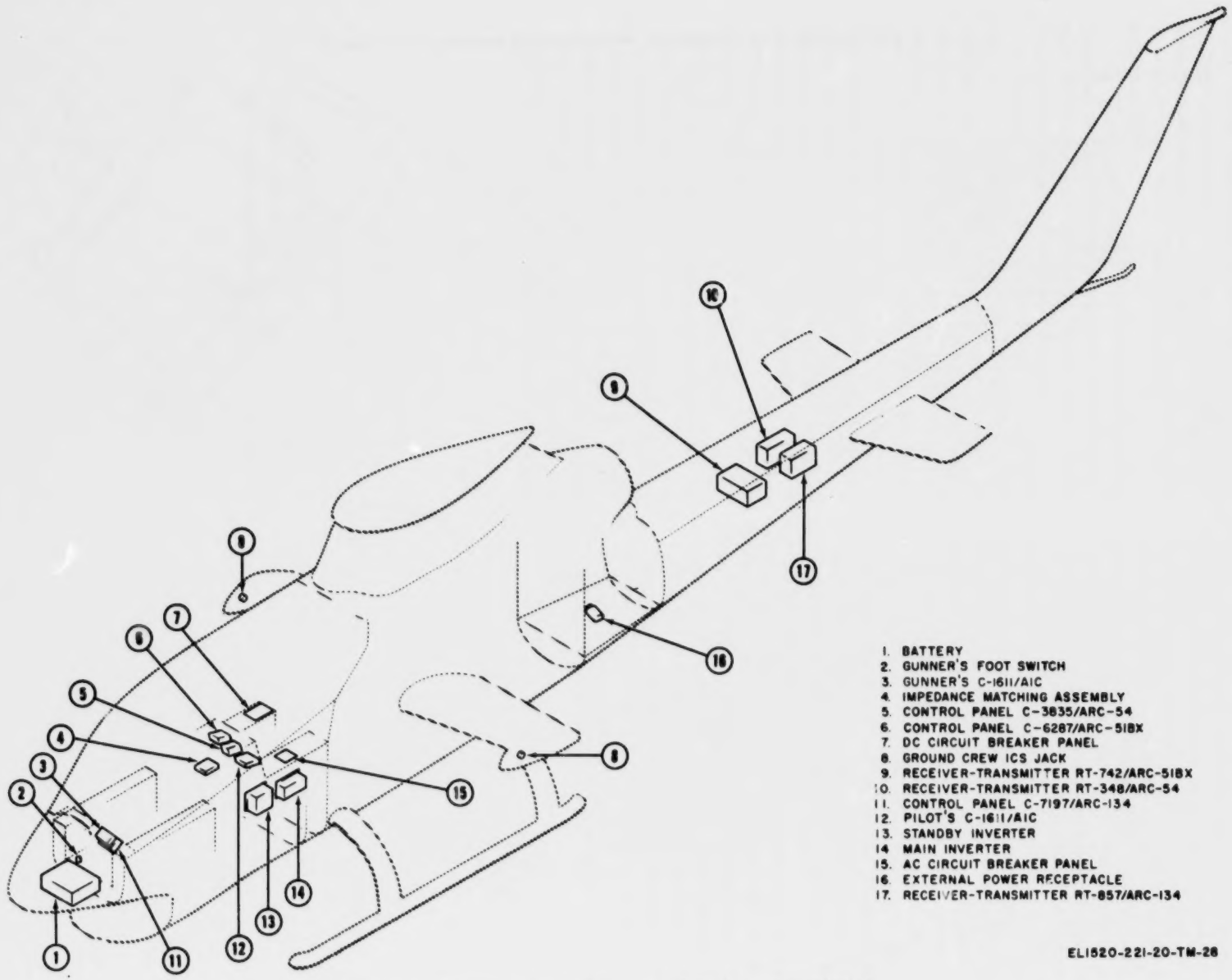


Figure 1-2. Communication and power equipment, configuration C.

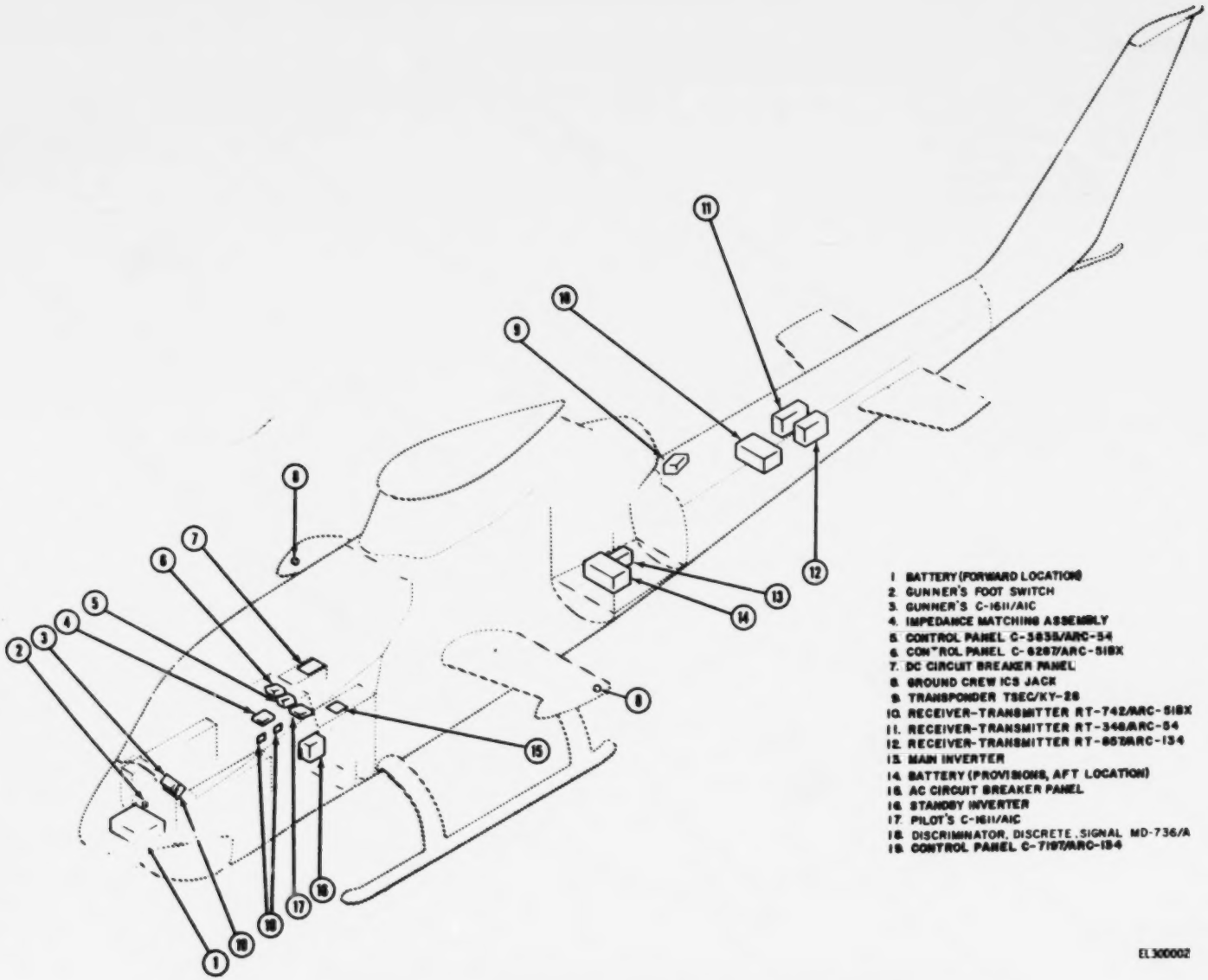


Figure 1-3. Communication and power equipment, configurations D and E.

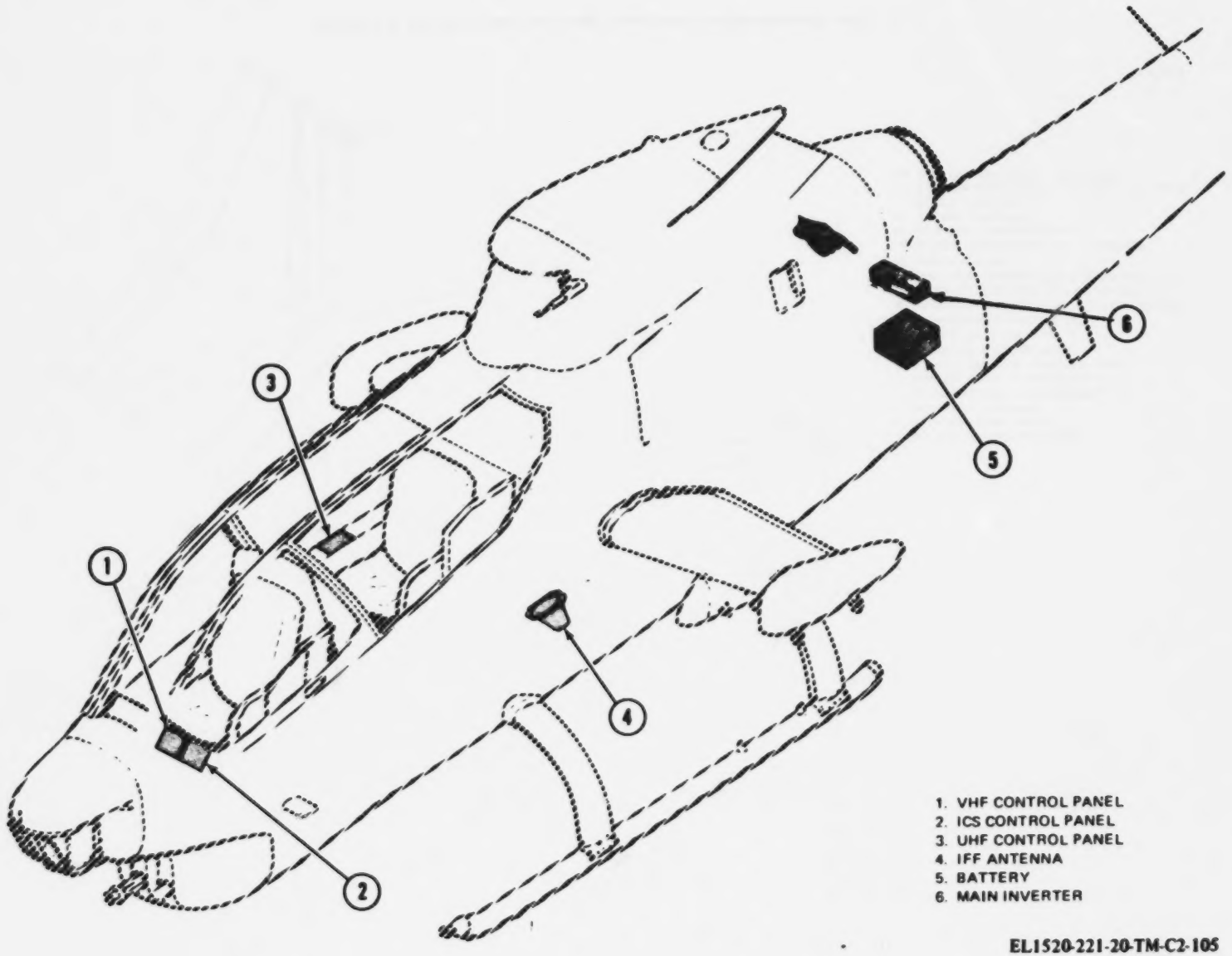


Figure 1-3.1. Peculiar equipment locations, configuration F.

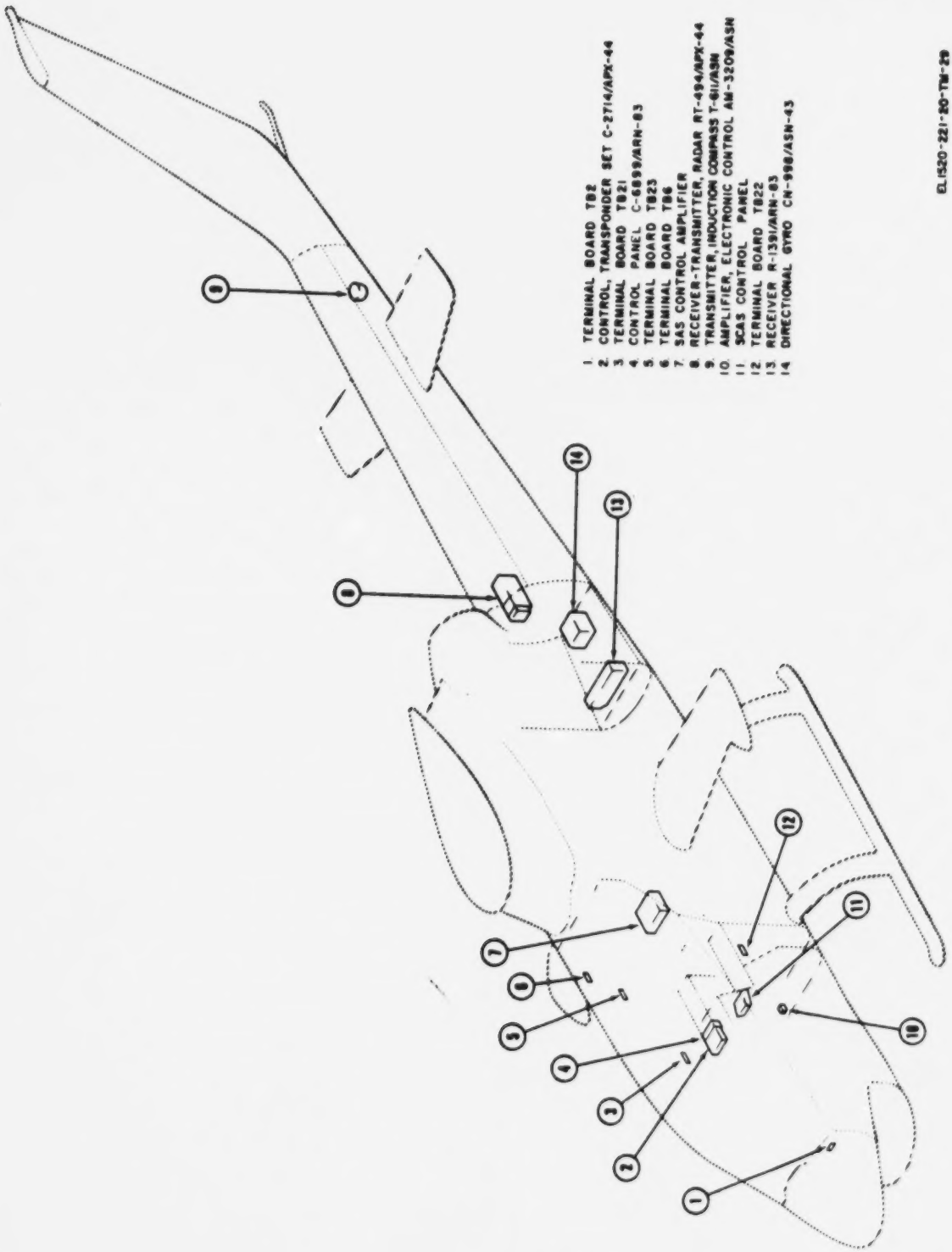
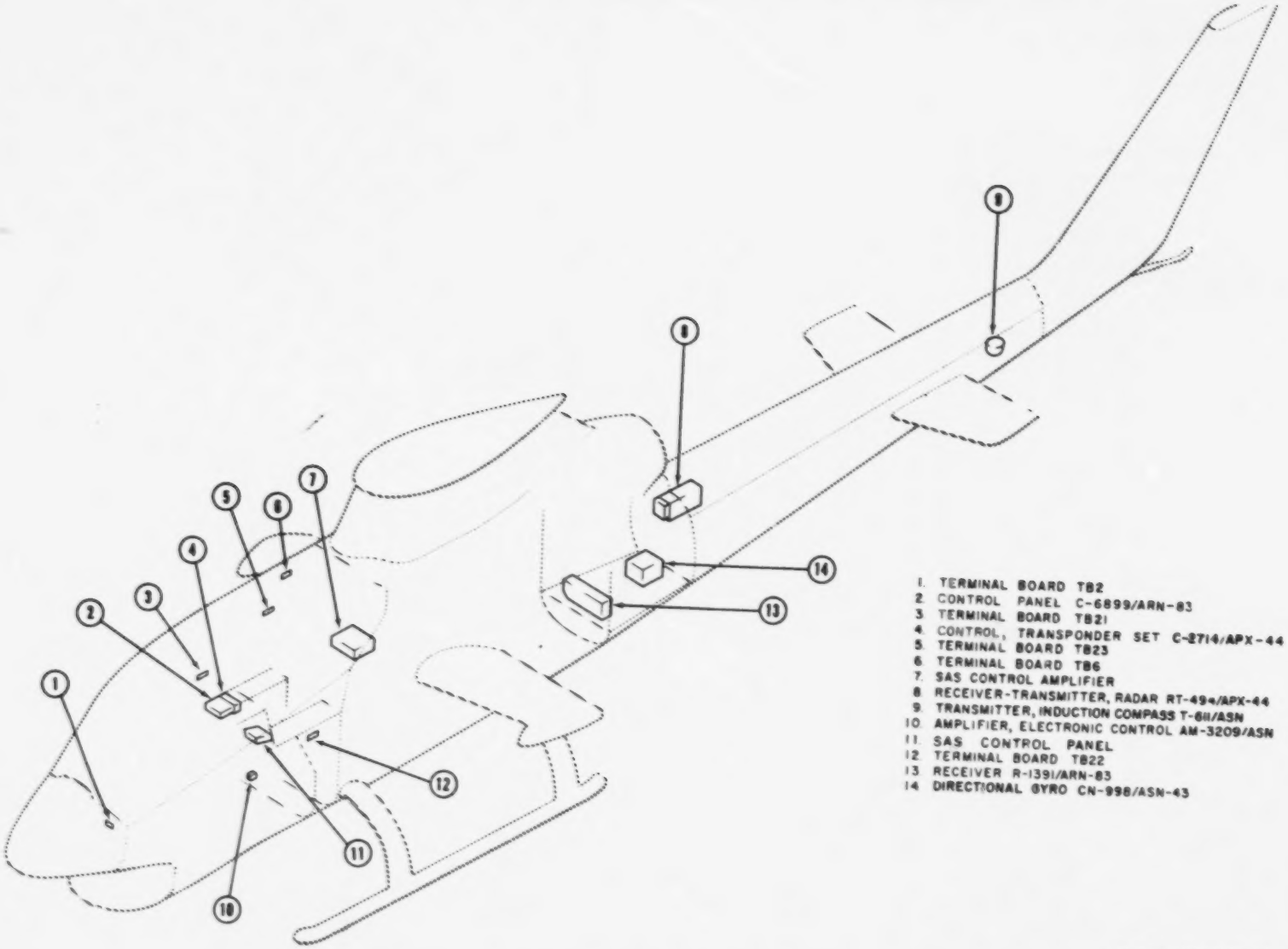


Figure 1-4. Navigation, stability and control augmentation, and identification equipment, configurations A and B.


1. TERMINAL BOARD TB2
2. CONTROL PANEL C-6899/ARN-83
3. TERMINAL BOARD TB21
4. CONTROL, TRANSPONDER SET C-2714/APX-44
5. TERMINAL BOARD TB23
6. TERMINAL BOARD TB6
7. SAS CONTROL AMPLIFIER
8. RECEIVER-TRANSMITTER, RADAR RT-494/APX-44
9. TRANSMITTER, INDUCTION COMPASS T-611/ASN
10. AMPLIFIER, ELECTRONIC CONTROL AM-3209/ASN
11. SAS CONTROL PANEL
12. TERMINAL BOARD TB22
13. RECEIVER R-1391/ARN-83
14. DIRECTIONAL GYRO CN-998/ASN-43

EL 1520-221-20-TM-30

Figure 1-5. Navigation, stability and control augmentation, and identification equipment, configuration C.

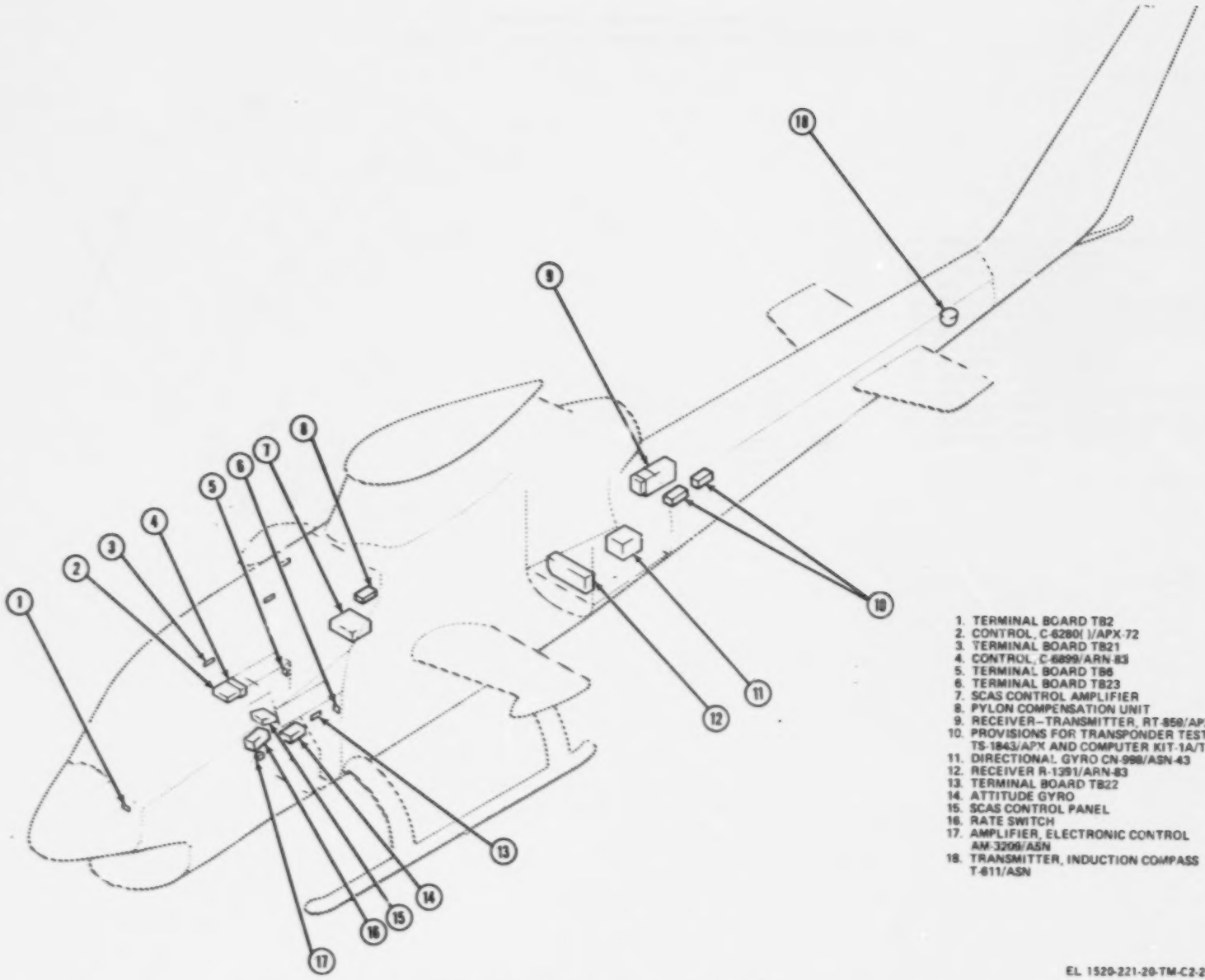
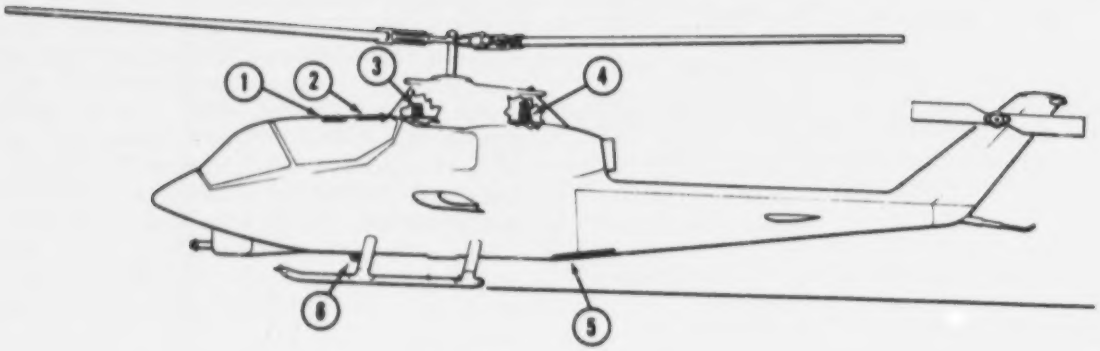
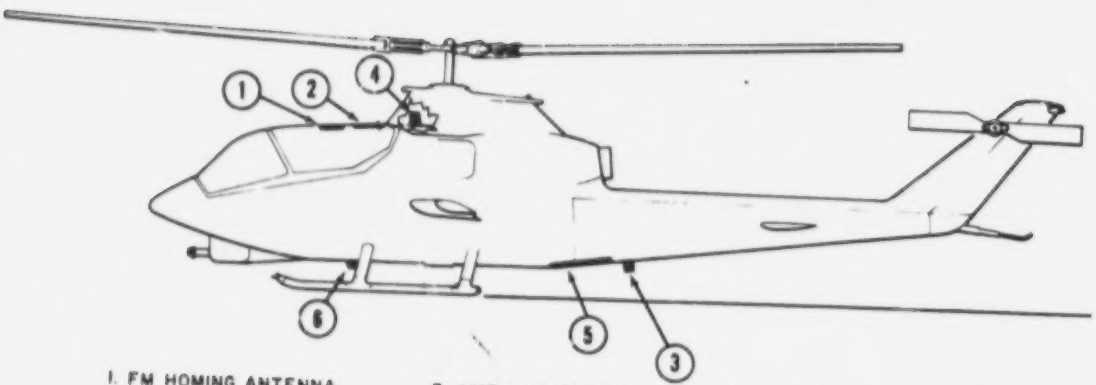

1. TERMINAL BOARD TB2
2. CONTROL, C-6280( )/APX-72
3. TERMINAL BOARD TB21
4. CONTROL, C-6899/ARN-83
5. TERMINAL BOARD TB6
6. TERMINAL BOARD TB23
7. SCAS CONTROL AMPLIFIER
8. PYLON COMPENSATION UNIT
9. RECEIVER-TRANSMITTER, RT-859/APX-72
10. PROVISIONS FOR TRANSPONDER TEST SET TS-1843/APX AND COMPUTER KIT-1A/T SEC
11. DIRECTIONAL GYRO CN-998/ASN-43
12. RECEIVER R-1391/ARN-83
13. TERMINAL BOARD TB22
14. ATTITUDE GYRO
15. SCAS CONTROL PANEL
16. RATE SWITCH
17. AMPLIFIER, ELECTRONIC CONTROL AM-3209/ASN
18. TRANSMITTER, INDUCTION COMPASS T-611/ASN
EL 1520-221-20-TM-C2-20

Figure 1-6. Navigation, stability and control augmentation, and identification equipment, configuration D and E.



CONFIGURATION A, B, AND C



1. FM HOMING ANTENNA
2. ADF LOOP ANTENNA
3. UHF-VHF ANTENNA
4. FM COMMUNICATION ANTENNA
5. ADF SENSE ANTENNA
6. IFF ANTENNA

CONFIGURATION D AND E (AND HELICOPTERS HAVING MWO 55-1520-221-30/17 ACCOMPLISHED)

EL 1520-221-20-TM-C2-9

Figure 1–7. Location of antennas

in DC circuit breaker panel (A10), and a 1-ampere AC FAIL RELAY located in AC circuit breaker cluster, pilot's section. The INVERTER SELECT SW switch (S3) is located on the pilot's electric power panel (A1). The inverter (MG1) supplies 115 vac to the 115-volt feeder bus when S3 is set to MAIN position. The inverter (MG2) supplies 115 vac to the 115-volt feeder bus when S3 is set to STANDBY position. Relay (K10) supplies signal voltage to the pilot's caution panel, segment INST INVERTER.

NOTE

In serial numbers 68-15000 through 69-16447 and those helicopters 66-15249 through 15701 having MWO 55-1520-221-30/12 accomplished, the PU-542(*)/A has been replaced by the PU-543(*)/A and relocated to aft electrical compartment. (See figure 3-11 for wiring diagram.)

NOTE

When engine is not operating, an auxiliary-power unit (APU) should be used when inverters are being operated on the ground.

e. Ac Power System (AH-1Q, F Configuration) (FO-17). This system consists of main inverter (PS1), standby inverter (MG1), inverter transfer relay (K73), Ac power control relay (K77), main and standby inverter overload sensor (S126 and S88 respectively), main and standby inverter control relays (K69 and K52 respectively), power factor correction capacitors (C6 and C7), and an inverter select switch (S3). Circuit breakers, serving as ON-OFF power links and circuit protectors, consist of a 1-ampere INV MAIN, a 1-ampere INV STBY both of which are located in DC circuit breaker panel (A10), and a 1-ampere AC FAIL RELAY located in AC circuit breaker cluster, pilot's section. The INVERTER SELECT SW switch (S3) is located on the pilot's electric power panel (A1). The inverter (PS1) supplies 3 phase, 115 vac to the 115-volt feeder buss when S3 is set to MAIN position. The inverter (MG1) supplies 1 phase, 115 vac to the 115-volt feeder bus when S3 is set to STANDBY position.

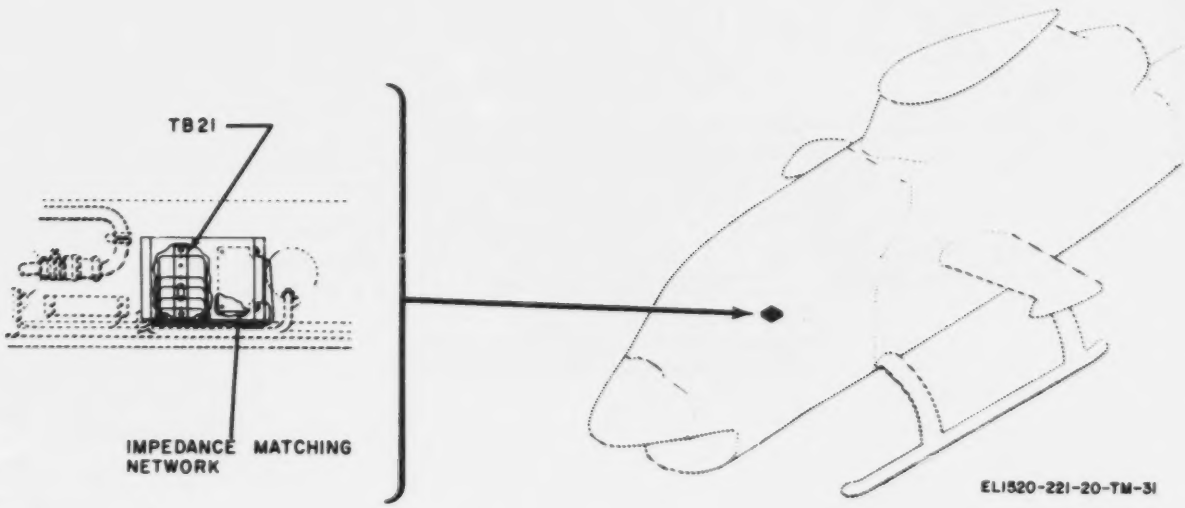


Figure 1-8. Impedance matching network, P/N 209-075-235.

NOTE

When engine is not operating, an auxiliary-power unit (APU) should be used when inverters are being operated on the ground.

f. Iff System. Transponder Set AN/APX-72, Test Set, Transponder TS-1843/APX-72, and Computer KIT-1A/TSEC are the main additional components of the AN/APX-72 not included in the AN/APX-44 components. Complete provisions are made for the AN/APX-72 components on configurations A, B, and C, shown in figure 1-9, and consist of the following:

(1) Test Set, Transponder TS-1843/APX-72.

(2) Computer KIT-1A/TSEC.

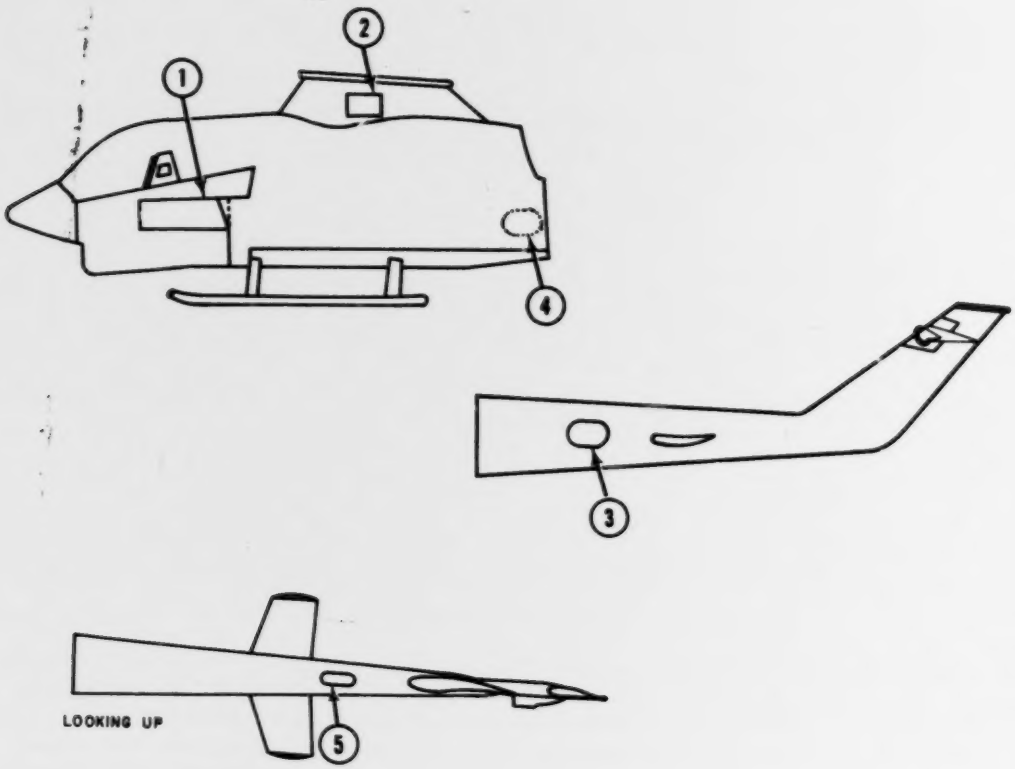
(3) Receiver-Transmitter RT-744/APX-72.

(4) Mounting MT-3287/APX-72.

(5) Control, Transponder Set C-6280A(P)/APX.

1-8. Description of Model 570A Stability and Control Augmentation System (SCAS) (fig. 1-10, 1-11, and 1-12)

The SCAS is a three-axis stability and control augmentation system. It is integrated into fore and aft, lateral, and directional flight controls to



1. PILOT'S AREA CONTROL PANEL (LH)
   ACCESS TO:
   A. SPARE INVERTER P/N 209-075-213
   B. ATTITUDE GYRO
   C. RATE SWITCH
   D. IMPEDANCE MATCHING NETWORK
   E. DISCRETE SIGNAL DISCRIMINATORS MD-736 (RIGHT HAND CONTROL PANEL)

2. ANTENNA ACCESS DOOR
   ACCESS TO:
   A. FM COMMUNICATION ANTENNA

3. AVIONICS COMPARTMENT DOOR
   ACCESS TO:
   A. RECEIVER-TRANSMITTER AN/ARC-51BX
   B. RECEIVER-TRANSMITTER AN/ARC-54
   C. RECEIVER-TRANSMITTER AN/ARC-134

4. ELECTRICAL COMPARTMENT DOOR (RH)
   ACCESS TO:
   A. AFT. BATTERY LOCATION
   B. DIRECTIONAL GYRO
   C. MAIN AND SPARE INVERTERS
   D. RECEIVER-R-1391/ARN-83
   E. RECEIVER-TRANSMITTER RT-494/APX-44 (OR RT-859/APX-72)

5. TAIL BOOM ACCESS DOOR
   ACCESS TO:
   A. COMPASS TRANSMITER

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Figure 1-9. Access door locations.

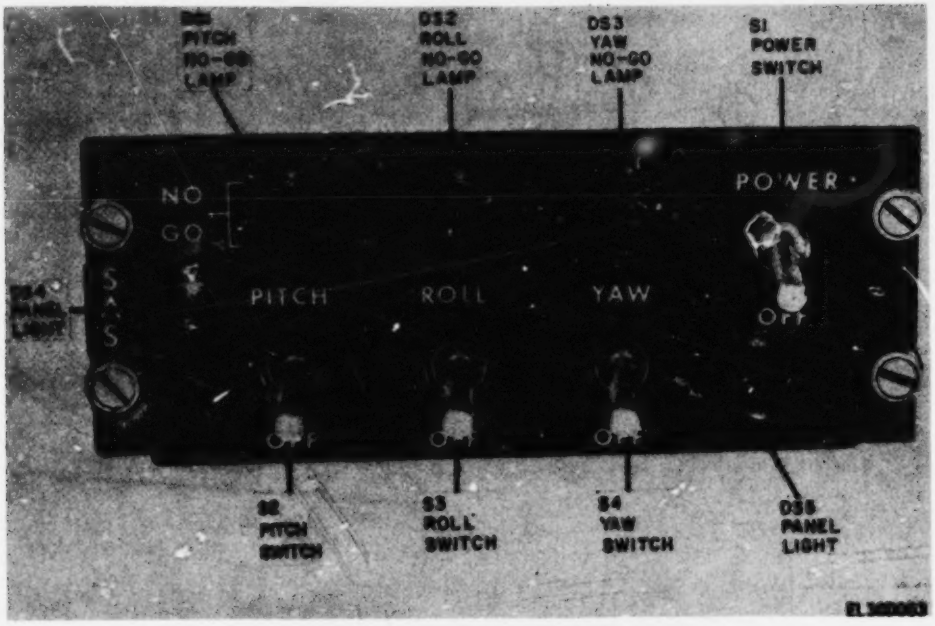


Figure 1-10. SCAS control panel.

improve the stability and handling qualities of the helicopter. The system provides a highly damped airframe for external disturbance, yet maintains high quality control-response characteristics for pilot inputs. The SCAS consists of two circuit breakers, a control panel, a sensor amplifier unit, three servo actuators, three solenoid-controlled hydraulic valves, and three control motion transducers. All the equipment is interconnected with multiconductor cable assemblies for transferring signal data and power within the system.

a. Control Panel. The con rol panel consists of a mounting plate, an edge-lit panel, one power switch, three engage switches, two edge-lit panel lights, three press-to-test NO GO indicator lights, four Dzus fastenerX to provide for console mounting, and one cable assembly with one 26-pin connector for electrical connection in the system. The functions of the controls on the panel are listed below:

Controls	*Function*
POWER switch	Applies 28 volts dc and 115 volts ac to the SCAS components when set to up (on) position. Disconnects power when set to OFF.
PITCH, ROLL, and YAW switches	Switches engage pitch, roll, and yaw channels when set to the up (on) position. The channels are disengaged when the switches are set to OFF.
PITCH, ROLL, and YAW NO GO indicator lights	When the lamps are lighted, they indicate an out-of-tolerance system condition, or an unexpired warmup period. The system should not be operated in this condition.

b. Sensor Amplifier Unit. The sensor amplifier unit is housed in a metal case with four holddown attach points. The front of the case contains two push-button switches, labeled GYRO TEST and ACTR TEST, and a hinged access door held in place by two captive screws. The switches test the rate gyros and servo actuators in conjunction with the built-in test equipment (BITE). If a NO

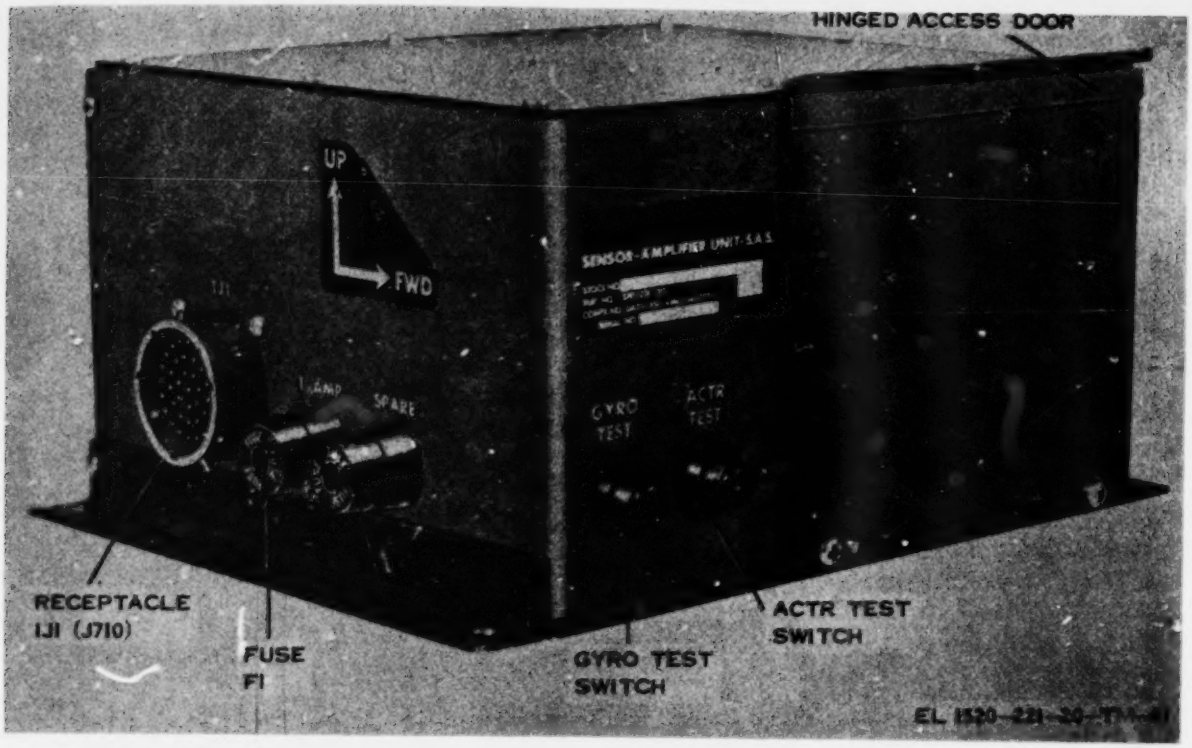


Figure 1-11. SCAS sensor amplifier.

GO lamp is lighted and the light extinguishes when the GYRO TEST switch is depressed, a rate gyro is defective. Similarly, if a NO GO lamp is lighted, and depressing the ACTR TEST switch causes the lamp to extinguish, a servo actuator is defective. The right side of the case contains one fuse and one spare fuse, and a 41-pin connector for transferring signal data and power within the system. The aft wall of the case is used as a common mount for the three rate gyros within the case. The unit is labeled on the same side as the connector to assure proper orientation in the helicopter.

c. Servo Actuator Assemblies. The three servo actuator assemblies include one control tube attached to one end of each servo actuator and a clevis attached to the other end. The control tube and clevis provide for the mounting of the servo actuator in series in the helicopter mechanical control systems. The internal piston and shaft of the actuator is hydraulically moved in and out of the actuator case to provide for mechanical displacement of helicopter controls. The internal centering and locking feature provides a solid link in the helicopter control linkage if hydraulic pressure to the actuator is lost or the channel is disengaged. An internal servo hydraulic valve provides for controlling hydraulic pressure to the piston in the proper direction of displacement. One 6-pin connector is attached to the case to provide for the transference of signal data and power.

d. Solenoid Valve. The solenoid valve consists of a metal case, three hydraulic ports (labeled CYL, RET, and PRESS) to provide for hydraulic connection to the helicopter hydraulic system and the servo actuators in the SCAS. Two attachment points are provided for installation on the helicopter structure. One 6-pin electrical connector is attached to the case to provide electrical connection to the system.

e. Control Motion Transducer. The control motion transducer consists of an internal linear potentiometer, a cylindrical case, a movable shaft, two attachment points (one on the case and one on the shaft) and a 6-pin connector for transferring signal data and power.

f. Pylon Compensation Unit. The pylon compensation unit (P.C.U.) is located aft and above the SCAS sensor amplifier unit. Only 28 volts dc is

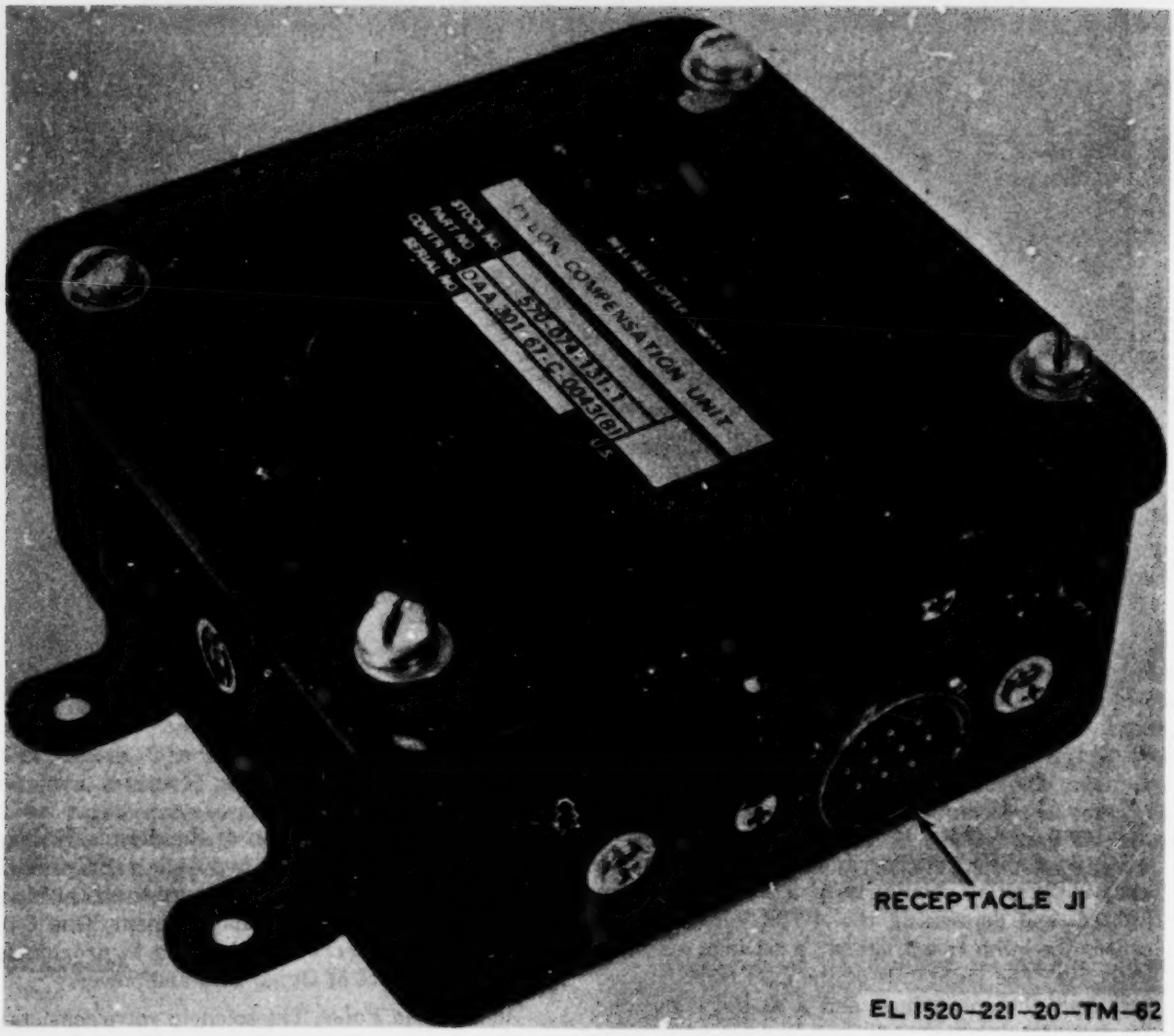


Figure 1-12. SCAS pylon compensation unit.

supplied to this unit from the SAS (SCAS) control panel. For pylon position information, the P.C.U. relies on two right-hand mounted pylon transducers (MT4 and MT5) of the same type as used for pilot's control information. Helicopters 68-15053 and subsequent, or those having MWO 55-1520-221-20/9 accomplished, utilize a single pylon transducer. Pitch pylon motion is applied through the PCU into the roll channel of the SCAS for damping.

g. Pylon Transducers, Dual System (MT4 and MT5) (Effective Helicopters Prior to 68-17032). The two transducers are linear potentiometers, one mounted to each right-hand pylon mount forward and aft. These transducers are installed between the pylon mounts and permanent airframe structure to sense pitch motion of the pylon. Output signals of the two linear transducers are inserted into the pylon compensator unit (AR2), where the signals are summed, shaped, attenuated, and inserted into the roll channel of the sensor amplifier for retardation of the pylon oscillation.

h. Pylon Transducer, Single System (Effective Helicopters 68-17032 and Subsequent, Also Those Having MWO 55-1520-221-20/9 Accomplished). The single transducer (MT6) is located between

pylon fifth mount and the transmission tail rotor driveshaft quill. The transducer senses pitch motion of the pylon. Output signals of the transducer are inserted into the pylon compensator unit (AR2) where the signals are summed, shaped, attenuated and inserted into the roll channel of the sensor amplifier for retardation of the pylon oscillation.

1-9. Proximity Warning Facility Installation

Proximity Warning Facility YG-1054 (PWS) is primarily intended for use by training commands in high density aircraft areas to avoid mid-air collisions. The PWD installation is accomplished by applying MWO 55-1520-221-30/49 to all aircraft based on Department of Army allocation. The Proximity Warning Facility can be applied to all aircraft with electronic configurations A through F starting with aircraft serial number 66-15249. The PWD, as applied to the communications facility is designated Y in the *Configuration* column.

1-10. AH-1Q and AH-1S (MOD) Configurations

The AH-1Q helicopter and the AH-1S (MOD) helicopter configurations are the same as configurations A, B, C, D, and E except for component locations and the main inverter. (See figure 1-3.1).

CHAPTER 2

MAINTENANCE INSTRUCTIONS

Section I. GENERAL REQUIREMENTS

2-1. Scope of Organizational Maintenance

The maintenance duties assigned to the organizational maintenance repairman of the helicopter electronic equipment configuration are listed below, together with references to the applicable paragraphs covering the specific maintenance functions. These maintenance duties supplement the phased maintenance checks and services contained in the organizational maintenance manual on the helicopter (TM 55-1520-221/234-PM). Procedures covered in this manual will be performed concurrently with the aircraft preventive maintenance checks and services. The results of the preventive maintenance checks and services will be recorded on applicable maintenance forms in accordance with instructions in TM 38-750.

a. Periodic preventive maintenance checks and services (para 2-6).

b. Cleaning and repainting (para 2-8).

c. Troubleshooting (para 2-10).

2-2. Tools, Test Equipment, and Materials Required

A list of parts authorized for organizational maintenance of the electronic equipment configuration appears in TM 11-1520-221-20P. Major electronic equipment components, when removed from the helicopter for higher category maintenance, are replaced by serviceable components from maintenance float stock, or on a direct exchange (DX) basis from higher category maintenance organizations (direct support maintenance). Tools, materials, and test equipment required for organizational maintenance are listed below.

a. Tools. All tools required are contained in Tool Kit, Radio Repairman TK-101/G.

b. Test Equipment. Multimeter AN/USM-223 is the only test equipment required.

c. Materials.

(1) Trichlorotrifluoroethane.

(2) Sandpaper, fine, No. 000.

(3) Cleaning cloth (lint free).

(4) Soft bristle brush.

(5) Lubricating oil, general purpose preservative.

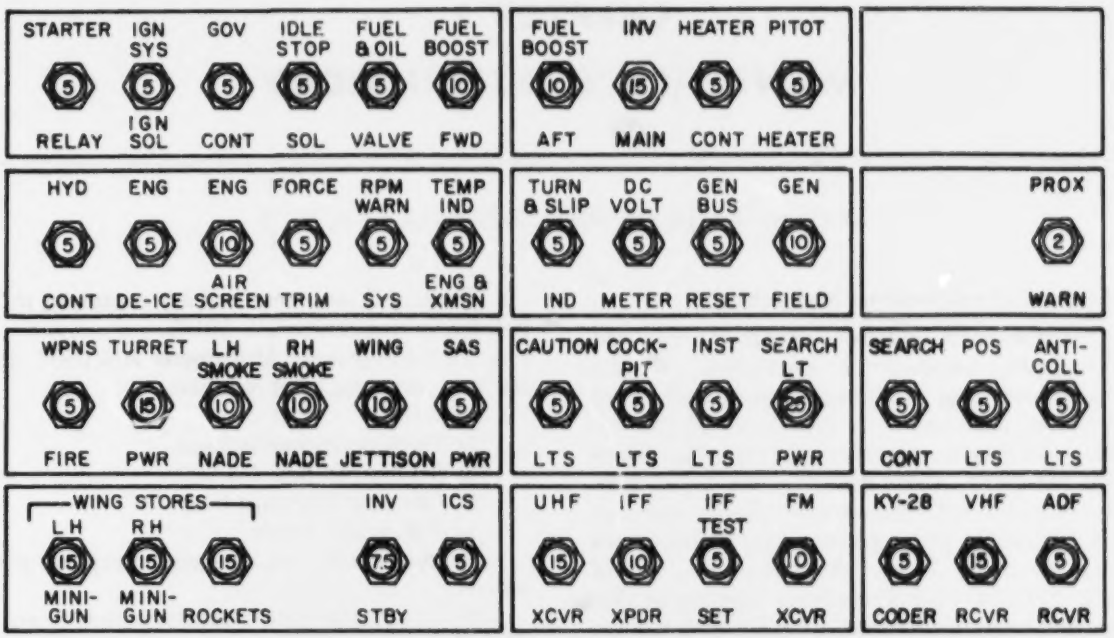
(6) The following safety wire can be requisitioned:

FSN	*Description*	*Diameter (inch)*	*Unit of issue*
9505-554-1421	Safety wire, steel, corrosion-resistant annealed.	0.032	Spool
9505-242-7527	Safety wire, steel, corrosion-resistant annealed.	0.047	Spool
9505-554-1420	Safety wire, steel, corrosion-resistant annealed.	0.063	Spool

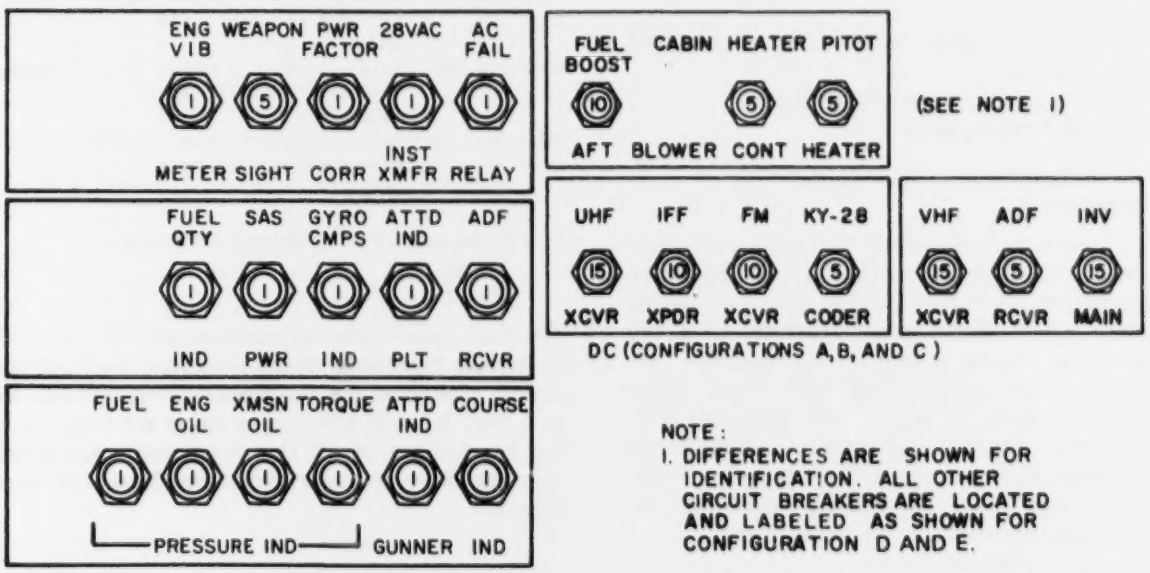
2-3. Fuse and Circuit Protective Device Locations (fig. 2-1)

The chart below lists the locations and ratings of all accessible fuses and circuit breakers that provide circuit protection for the electronic equipment. Be sure that fuses of the proper value are inserted in the fuseholders of all the components indicated. Depress all press-to-set circuit breakers that have tripped.

Equipment	*Rating*	*Location*	*Figure No.*
Control, Intercommunications Set C-1611(*)/AIC	28V DC 5 amp.	Pilot's DC circuit breaker panel	2-1
Radio Set AN ARC-54	28V DC 10 amp.	Pilot's DC circuit breaker panel	2-1
Radio Set AN ARC-51BX	28V DC 15 amp.	Pilot's DC circuit breaker panel	2-1
Radio Set AN ARC-134	28V DC 15 amp.	Pilot's AC circuit breaker panel	2-1
Gyromagnetic Compass Set AN/ASN-43	115V AC 1 amp.	Pilot's AC circuit breaker panel	2-1



DC (CONFIGURATION D AND E)



AC

DC (CONFIGURATIONS A, B, AND C)

(SEE NOTE 1)

NOTE:
1. DIFFERENCES ARE SHOWN FOR IDENTIFICATION. ALL OTHER CIRCUIT BREAKERS ARE LOCATED AND LABELED AS SHOWN FOR CONFIGURATION D AND E.

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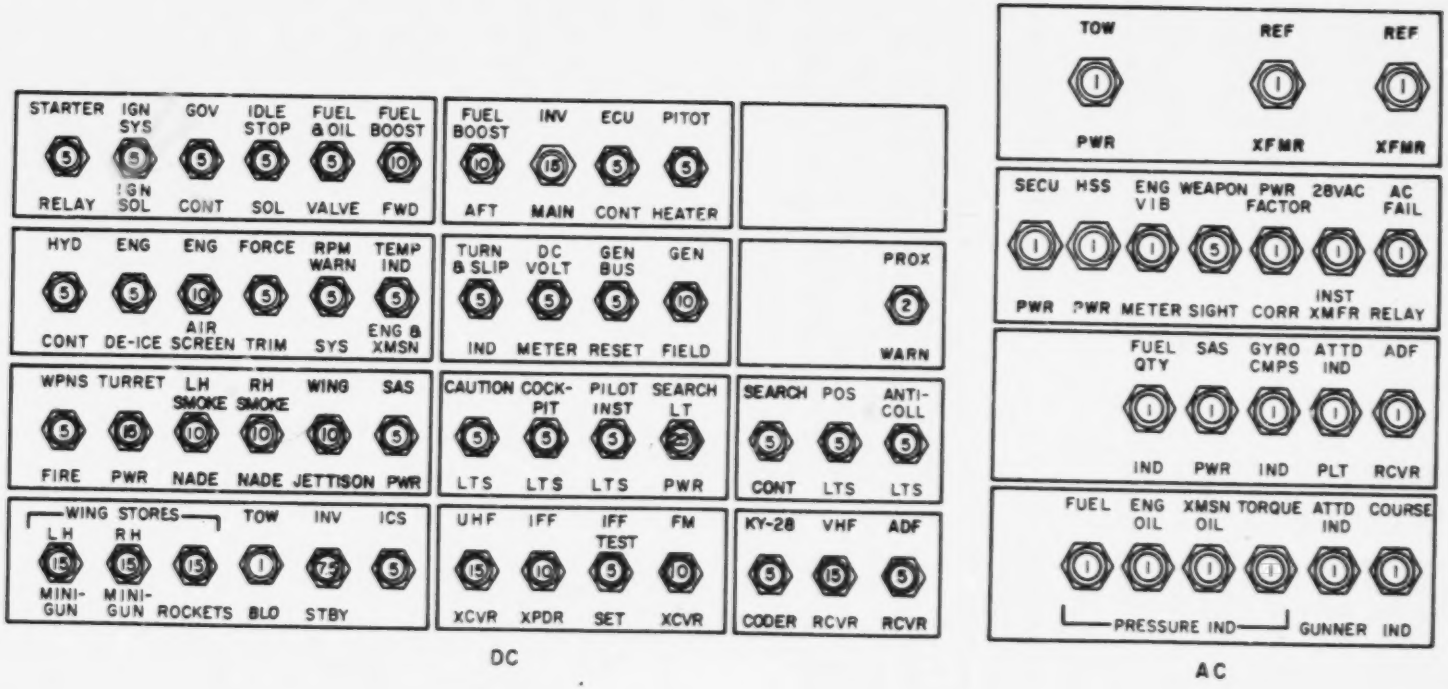
CONFIGURATIONS A, B, C, D, and E.

Figure 2-1. Ac-dc circuit breaker panels (Sheet 1 of 2)



CONFIGURATION F

EL1520-221-20-TM-C2-1-2

Figure 2-1. *Ac-dc circuit breaker panels (Sheet 2 of 2)*

Equipment	Rating		Location	Figure No.
Direction Finder Set AN/ARN-83	26V AC	1 amp	Pilot's AC circuit breaker panel	2-1
	28V DC	5 amp	Pilot's DC circuit breaker panel	2-1
Transponder Set AN/APX-44	28V DC	10 amp	Pilot's DC circuit breaker panel	2-1
TSEC/KY-28	28V DC	5 amp	Pilot's DC circuit breaker panel	2-1
Main inverter	28V DC	15 amp	Pilot's DC circuit breaker panel	2-1
Standby inverter	28V DC	7 amp	Pilot's DC circuit breaker panel	2-1
Attitude Indicators	26V AC	1 amp	Pilot's AC circuit breaker panel	2-1
Indicator, Radio-Magnetic Compass ID-998/ASN	26V AC	1 amp	Pilot's AC circuit breaker panel	2-1
Indicator, Course ID-350/ARN	26V AC	1 amp	Pilot's AC circuit breaker panel	2-1
Stability and Control Augmentation System	115V AC	1 amp	Pilot's AC circuit breaker panel	2-1
	28V DC	5 amp	Pilot's DC circuit breaker panel	2-1
Stability and Control Augmentation System Amplifier Unit.	28V DC	1 amp	SCAS Amplifier Unit	1-11
Proximity Warning Facility YG-1054	-28V DC	2 amp	Pilot's DC circuit breaker panel	2-1

2-4. External Power Connection (fig. 2-2)

Before operating the electronic equipment for performing the operational checks or troubleshooting the helicopter electronic equipment configuration, connect Aircraft Ground Servicing Unit, Multipurpose, Type MA-1, or equivalent, to prevent excessive drain on the helicopter battery.

An external hydraulic power source is required for operational checks and troubleshooting of the stability augmentation system. Coordinate connection of the Type MA-1 and the hydraulic power supply with the aircraft crew chief or aircraft repair personnel. To connect the hydraulic power supply, refer to TM 55-1520-221/234-23. To connect the Type MA-1 unit, proceed as follows:

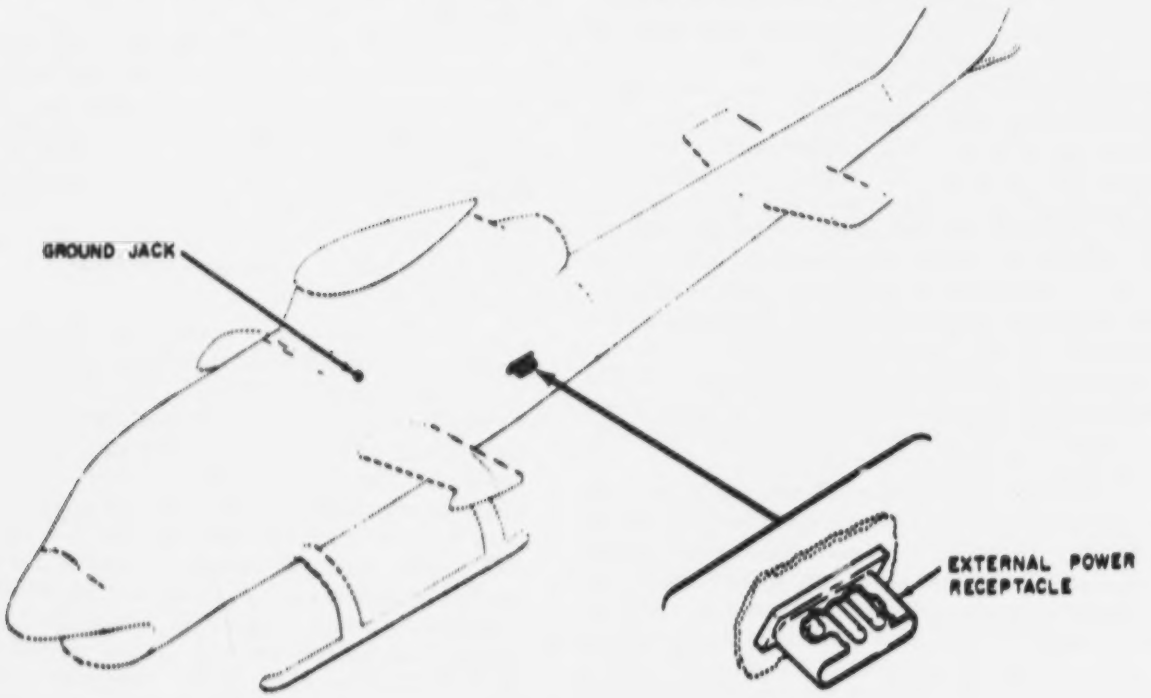


Figure 2-2. External power receptacle and ground jack.

WARNING

Prior to connecting the auxiliary power unit, the helicopter must be electrically grounded by connecting a grounding strap between the jack marked GROUND HERE (fig. 2-2) and a static ground rod.

a. Position the Battery switch located on the pilot's console to OFF.

CAUTION

The switch must always be at OFF while the auxiliary power unit is connected to the helicopter.

b. Connect the auxiliary power unit plug to the helicopter EXT POWER SUPPLY 28 VOLTS DC receptacle on the left side of the fuselage exterior immediately aft of the wing (fig. 2-2).

c. Turn on the auxiliary power unit.

2-4.1. Annual Compass Certification Checks

The Gyromagnetic Compass Set AN/ASN-43 should be certified for accuracy at least once during each 12 month period in accordance with instructions contained in TM 11-4920-292-15.

2-4.2. Damage to Displacement Gyroscope

If the helicopter is moved before the CN-1314/A displacement gyroscope ASN-43 comes to rest, the gyro may be seriously damaged.

CAUTION

Do not move the helicopter for twenty-five (25) minutes after power has been removed from the CN-1314/A. If however, the helicopter must be moved after shutdown, power should be reapplied to the CN-1314/A and after five (5) minutes the helicopter may be safely moved.

Section II. PREVENTIVE MAINTENANCE PROCEDURES

2-5. Preventive Maintenance

Preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to assure maximum operational capability. Preventive maintenance is the responsibility of all categories concerned with the configurations, and includes the inspection, testing, and repair or replacement of components that inspections and tests indicate would probably fail before the next scheduled service period. Preventive maintenance checks and services of the electronic equipment configuration for the helicopter at organizational maintenance are made at intervals (TM 55-1520-221/234-23) unless otherwise directed by the commanding officer. The maintenance checks and services of the electronic configuration should be performed concurrently with the inspection of the helicopter.

a. Maintenance Checks and Services. The maintenance checks and services procedures provided by TM 55-1520-221/234-23 and this manual outline functions to be performed at specific intervals. These checks and services are to maintain combat serviceability; that is, to maintain the helicopter and its electronic equipment configuration in good general (physical) condition and in good operating condition. To assist the organizational maintenance repairman in maintaing combat serviceability, the chart indicates what to check, how to check, and what the normal conditions are. The *References* column lists the paragraphs and publications that contain additional information. If a defect cannot be remedied by the organizational maintenance repairman, higher category maintenance or repair is required.

b. Maintenance Forms and Records. Records and reports of these checks and services and the maintenance forms and records to be used and maintained on the electronic equipment configuration are specified in TM 38-750. Paragraph 1-3 contains additional information concerning the submission of specific forms.

2-6. Preventive Maintenance Checks and Services Intervals

a. General. Preventive maintenance checks and services are performed on the aircraft as scheduled in TM 55-1520-221/234-PM. The aircraft daily preventive maintenance checks and services are performed each calendar day, or after approximately 8 hours of flying time. The aircraft phase preventive maintenance checks and services are performed in accordance with TM 55-1520-221/234-PM. Preventive maintenance checks and services of the electronic equipment configuration will be scheduled concurrently with applicable preventive maintenance checks and services of the aircraft (TM 55-1520-221/234-PM). Daily preventive maintenance checks and services are not performed on the electronic equipment configurations. The daily checks are accomplished when the pilot or operator performs the preflight checks (TM 55-1520-221/234-10). All deficiencies or shortcomings noted during the performance of the

preventive maintenance chevks and services of the electronic equipment configuration will be immediately reported to direct support maintenance personnel through the use of forms and proceiures specified in TM 38-750. Equipment that has a deficiency that cannot be corrected at the organizational maintenance category should be deadlined and reported to higher maintenance category, using the form specified in TM 38-750. Perform all of the checks and services in the applicable preventive maintenance checks and services chart (para 2-7). Whenever a normal condition or result is not observed, take corrective action in accordance with the paragraph listed in the *References* column.

b. Periodic Pullout Checks. During the periodic preventive maintenance checks and services of the electronic equipment configuration, each of the avionics items will be inspected in accordance with paragraph 2-7. Components will only be removed if found to be operationally defective or degraded to a level where safety of personnel or completion of mission would be questionable. When components must be removed from the helicopter, they will be replaced by equivalent serviceable components from maintenance float stock or, on a direct exchange basis, from the direct support maintenance organization.

c. Pullout Intervals. The chart below lists all the electronic equipment components in the helicopter electronic equipment configuration, the pullout interval, if any, and the removal-replacement procedures reference.

Component	Pullout interval (flying hours)	Procedures (para)
Control, Intercommunications Set, C-1611(*)/AIC(2)	Not required	2-15
Microphone Switch (cyclic)	Not required	2-53
Microphone Switch (foot)	Not required	2-52
Radio Receiver-Transmitter for AN/ARC-54 or AN/ARC-131	Not required	2-20
Mounting MT-1535/ARC-54	Not required	2-21
Control, Radio Set C-3835/ARC-54 or C-7088/ARC-131	Not required	2-19
Antenna, Homing (lead foil)	Not required	223
Antenna, Communication AS-2285/ARC	Not required	2-22
Indicator ID-48/ARN	Not required	
Receiver-Transmitter RT-742/ARC-51BX	Not required	2-26
Mounting MT-2653/ARC	Not required	2-26
Control, Radio Set C-6287/ARC-51BX	Not required	2-25
Antenna AT-1108/ARC	Not required	2-27
Receiver-Transmitter RT-857/ARC-134	Not required	2-30
Mounting MT-3791/ARC-134	Not required	2-30
Control, Radio Set C-7197/ARC-134	Not required	2-29
Radio Receiver R-1391/ARN-83	Not required	2-33
Mounting MT-3605/ARN-83	Not required	2-33
Direction Finder Control, Radio Set C-6899/ARN-83	Not required	2-32
Antenna, Loop Type 137A-7	Not required	2-36
Antenna, Sense P/N 209-030-133	Not required	2-37
Directional Gyroscope CN-998/ASN-43	Aligned once a year	2-39
Transmitter, Induction Compass T-611/ASN	Aligned once a year	2-40
Compensator, Magnetic Flux CN-405/ASN	Aligned once a year	2-40
Indicator, Course ID-250/ARN	Aligned once a year	2-35
Indicator, Radio-Magnetic Compass ID-998/ASN	Aligned once a year	2-34
Amplifier, Electronic Control AM-3209/ASN	Aligned once a year	
Receiver-Transmitter, Radar RT-494/APX-44	Not required	2-44
Control, Transponder Set C-2714/APX-44	Not required	2-45
Mounting MT-2100/APX-44	Not required	2-44
Antenna AT-884/APX-44	Not required	2-46
Main Inverter	Not required	2-57, 2-57.1
Standby Inverter	Not required	2-58
Receiver-Transmitter, Radio RT 859/APX-72	Not required	2-47
Control Indicator C-8157/ARC	Not required	
Stability Control Augmentation System		
Control Panel 570-074-060	Not required	2-55
Amplifier Unit 570-074-010	Not required	2-55
Pylon Compensation Unit	Not required	2-56
Rate Switch Gyro	Not required	2-42
Test Set, Transponder TS-1843/APX	Not required	2-50
Computer KIT-1A/TSEC	Not required	2-51
Discriminator, Discrete Signal MD-736/A	Not required	2-17
Gyroscope Vertical Displacement CN-1314/A	Aligned once a year	2-41
Control, Transponder Set C-6280A(P)/APX	Not required	2-48
Proximity Warning Facility YG-1054		
Antenna	Not required	2-59.1
Receiver/Transponder	Not required	2-59.2

2-7. Periodic Preventive Maintenance Checks and Services Chart

Sequence No.	Item	Procedure	References
		POWER-OFF INSPECTION	
1	Entire configuration ---	Inspect the entire electronic configuration (fig. 1-1 through 1-7) for completeness, general condition, and cleanliness. Remove all electronic equipment scheduled for bench tests.	Para 1-5 and TM 55-1520-221-20.
2	Publications ----------	Check to see that pertinent publications are available: a. Operator's manuals are complete and in usable condition without missing pages. b. All Changes pertinent to the equipment are on hand. c. Organizational maintenance manual is complete and in usable condition.	App A.
3	Modification work orders ----------	Check DA Pam 310-4 to determine if new applicable MWO's have been published; check to see that all URGENT MWO's have been applied to the equipment, and that all NORMAL MWO's have been scheduled.	DA Pam 310-4.
4	Battery ----------	Check the battery (fig. 2-3) in accordance with the appropriate technical manual.	TM 11-6140-203-14-2 TM 55-1520-221/234-23
5	Frequency cards, decals, stencils, and other insignia.	Check for up-to-date frequency cards in the frequency card holders. Check all decals, stencils, and other insignia for legibility.	TM 55-1520-221-10.
6	Headset-microphones --	Check the headset-microphones, microphone adapters, and associated receptacles for possible damage. Check to see that they are clean and properly connected and that the wiring is free of cuts or breaks.	
7	Microphone switches ---	Check all trigger-and-foot-operated switch wiring for fraying.	
8	Antennas ----------	Inspect all antenna systems (fig. 1-7 and 2-13) as follows: a. Check all antennas for security of mounting, and for any sign of damage or fatigue. Inspect insulators for cracks; clean with trichloroethane. b. Inspect all exposed lead-ins and connectors for any sign of damage or frayed wires or insulation.	Para 2-22, 2-23, and 2-27.
9	Equipment replacement	a. Replace units of the electronic configuration that were removed b. Safety-wire all units ---------- c. Perform the necessary adjustments to the replaced components.	a. Para 2-12 through 2-61. b. Para 2-62. c. Para 2-62, 2-63, and 2-64.

Sequence No.	Item	Procedure	References
10	Auxiliary power unit	Connect an auxiliary power unit to the helicopter to supply the primary 28 volts dc (fig. 2-2).	Para 2-4.
11	Helicopter ac power	Set the INVTR (Motor generator) switch to MAIN (up) to energize the helicopter ac electrical circuits.	
12	External hydraulic power source.	Connect hydraulic power source to helicopter. Refer to TM 55-1520-221-20.	
	OPERATIONAL CHECK, INTERPHONE FACILITY		
13	Control, Intercommunications Set C-1611(*)/AIC.	Depress the ICS circuit breaker, which energizes the distribution panel and panel lights. Set the distribution panel C-1611(*)/AIC control as follows: *a.* TRANS selector switch to INT. *b.* RECEIVER switches to the down (off) position. *c.* Turn the VOL control clockwise until a rushing noise is heard in headsets.	Fig. 2-1; para 2-11, sequence No. 13.
14	Pilot's microphone switch (cyclic).	Press the pilot's microphone switch, and speak into the H-101/U microphone. Sidetone is heard in pilot's headset, and interphone signals are heard in gunner's headset.	Para 2-11, sequence No 14.
15	Gunner's microphone switch (cyclic).	Press gunner's microphone switch, and speak into the H-101/U microphone. Sidetone is heard in gunner's headset, and interphone signals are heard in pilot's headset.	Para 2-11, sequence No. 15.
16	Gunner's microphone switch (foot).	Press gunner's microphone footswitch and speak into microphone. Sidetone is heard in gunner's headset and interphone signals are heard in pilot's headset.	Para 2-11, sequence No. 16.
17	Control, Intercommunications Set C-1611(*)/AIC.	Set transmit-interphone selector switch to PVT. Perform steps in sequence No. 13, 14, and 15 above. **NOTE** Before establishing communications with fm, uhf, and vhf radios, set transmit-interphone switch on C-1611(*)/AIC to following positions: *Position* — *Radio set* 1 ---------- Fm 2 ---------- Uhf 3 ---------- Vhf	Para 2-11, sequence No. 17.
17.1	**Discriminator, Discrete Signal MD-736/A.**	**Depress FM, UHF and VHF circuit breakers. After warm-up period, position SQUELCH control on the FM radio to DIS and perform the following checks at both ICS stations:** *a.* **Position ICS RECEIVER switch 1 up (on) and listen for the rushing noise.** *b.* **Leave RECEIVER switch 1 on and turn the TRANS selector switch to position 2 (UHF).**	

Sequence No.	Item	Procedure	References
		Key the radio and the rushing noise should cease. This indicates proper operation of the discriminator and removal of FM audio from the ICS control station.	
		c. Perform the above procedures on the VHF radio set, leaving the ICS RECEIVER switch 1 on.	
		d. If the rushing noise does not cease at either ICS station, that station will be considered "insecure" and will not be used to transmit UHF or VHF while the other ICS station is transmitting FM. Remove and replace the discriminator at the insecure station.	Para 2-17.
		POWER-OFF INSPECTION, RADIO SET AN/ARC-54 OR AN/ARC-131	
18	Exterior surfaces ------	*a.* Clean control unit, receiver-transmitter, and mounting. *b.* Inspect exposed metal surfaces for rust, corrosion, and bare spots.	
19	Cables and connectors --	Check all cables for evidence of chafing, cracking, or excessive strain. Refer to higher category maintenance for replacement. Check all electrical connectors for dents, cracks, or improper mating.	
20	Receiver-Transmitter, Radio RT-348/ARC-54 or RT-823/ARC-131.	*a.* Check to see that receiver-transmitter (fig. 2-6) is securely mounted. *b.* Check the meter for dirty or broken glass. *c.* Check to see that all controls operate smoothly with no binding.	
21	Mounting MT-1535/ ARC-54 ----------	Check to see that the mounting (fig. 2-6) is securely fastened to the aircraft frame or rack. Check to see that the groundstraps are secure and that the shock isolators work smoothly. Check for any signs of physical damage.	
22	Control, Radio Set C-3835/ARC-54 or C-7088/ARC-131.	*a.* Check to see that the control unit is securely mounted. *b.* Check the controls for smooth mechanical action and check to see that the knobs are tight.	
		POWER-ON INSPECTION, RADIO SET AN/ARC-54 or AN/ARC-131	
23	Primary power --------	*a.* Depress the FM circuit breaker ---------- *b.* Check to see that control unit panel lamps light. NOTE Brilliancy of lamp is controlled by aircraft panel light control.	Para 2-11, sequence No. 23.
24	Blower ----------	Set mode control on control unit (fig. 2-4) to PTT (T/R for AN/ARC-131), and check to see that blower in receiver-transmitter operates. Select CARR mode of squelch.	Para 2-11, sequence No. 24.

Sequence No.	Item	Procedure	References
25	Squelch	Rotate SQ ADJ control on receiver-transmitter fully counterclockwise, and adjust VOL control on control panel until background noise is at a comfortable level. Rotate SQ ADJ control clockwise until background noise just cuts out.	Para 2–11, sequence No. 25.
26	Audio	Tune radio set to a frequency of a local fm station. A channel-changing tone shall be heard in headset while radio set is tuning. When tone stops, radio set is tuned.	Para 2–11, sequence No. 26.
27	Receiver-Transmitter, Radio RT–348/ ARC–54 or RT–823/ ARC–131.	Establish two-way voice communication with local fm station.	Para 2–11, sequence No. 27.
28	Radio Set homing operation (when homing facilities are installed).	Operate radio set for homing operation	Para 2–11, sequence No. 28.
29	Mode control switch	Set to OFF position to deenergize the AN/ ARC–54 or AN/ARC–131.	Para 2–11, sequence No. 29.
	POWER-OFF INSPECTION, RADIO SET AN/ARC–51BX		
30	Exterior surfaces	*a.* Clean the receiver-transmitter, radio set control, and reflectometer front panels. Check for broken meter and indicator glass on the radio set control and reflectometer. Refer to higher category of repair. *b.* Check all exposed metal surfaces for rust and corrosion.	App A.

Sequence No.	Item	Procedure	References
31	Exterior items	a. Check safety wiring on the wingnut fasteners on the mounting. b. Check to see that mechanical action of switches and knobs is smooth and free of binding and scraping on the radio set control. Tighten loose mounting screws. Refer radio set control with defective controls to higher category repair. c. Check handles for looseness and defects.	Para 2-60, app A.
32	Deleted.		
33	External blower air filter	a. Remove and inspect the air filter b. Clean the air filter if dirty.	App A.

POWER-ON INSPECTION, RADIO SET AN/ARC-51BX

34	UHF circuit breaker	a. Depress the UHF circuit breaker b. Set the function select switch to T/R position. Check for operation of external blower on receiver-transmitter.	Para 2-11, sequence No. 34.
35	Radio set control	Set SQ DISABLE switch to OFF	Para 2-11, sequence No. 35.
36	Radio set control VOL control.	Turn fully counterclockwise and then fully clockwise. Listen for corresponding decrease and increase in headset audio noise.	Para 2-11, sequence No. 36.
37	Radio set 10-, 1-, and 0.1-mc controls.	Operate controls to select assigned test frequency channel. Listen for 800-cps audio tone in headset during channel-change cycle. NOTE If receiver-transmitter is remotely located from microphone push-to-talk switch, it will be necessary to use two men to perform 38 and 39 below.	Para 2-11, sequence No. 37.
38	Reflectometer rf wattmeter, transmitter power output.	Press microphone push-to-talk switch and observe rf wattmeter indication. The power output should be at least 16 watts.	Para 2-11, sequence No. 38.
39	Reflectometer rf wattmeter, reflected power.	With microphone switch depressed, press PRESS OR REL POWER switch. Reflected power should be less than 5 watts.	Para 2-11, sequence No. 39.
40	Receiver-transmitter sidetone.	Speak into the microphone and listen for sidetone audio in the headset.	Para 2-11, sequence No. 40.
41	Receiver-transmitter operation test.	Communicate with base control tower or another uhf receiver-transmitter on at least three frequencies across the uhf band to test receiver-transmitter operation.	Para 2-11, sequence No. 41.
42	Guard receiver and radio set control function select switch.	Place radio set control function select switch on T/R+G. Arrange for communications check on guard receiver frequency of 243.0 MHz. Listen for clear, intelligible audio in headset.	Para 2-11, sequence No. 42.
43	SQ DISABLE switch	Listen for rushing audio noise in headset. Set to ON. Audio noise should cut out.	Para 2-11, sequence No. 43.

Sequence No.	Item	Procedure	References
44	Preset channel	Operate controls to select preset channel. Listen for 800 Hz audio tone in headset during channel-changing cycle.	Para 2-11, sequence No. 44.
	POWER-OFF INSPECTION, DIRECTION FINDER SET AN/ARN-83		
45	Air vents	Clean air ventilating holes in receiver dust cover.	App A.
46	Exterior surfaces	a. Clean control unit front panel, tuning meter lens, and FREQUENCY dial window. b. Check for broken tuning meter lens and FREQUENCY dial window. If lens or dial window is broken, notify higher category maintenance. c. Check exposed metal surfaces of control unit, receiver, and receiver mount for rust or corrosion. d. Check surface of loop antenna for dents, deep scratches, and cracks. If antenna is damaged, notify higher category maintenance.	
47	Cables and connections	a. Clean cable connectors and check tightness of all connectors. b. Tighten all cable connections at rear of control unit and at front of receiver. Check and tighten cable connections at rear of receiver mount. c. Check all interconnecting cables and connectors for cracks and breaks. Replace cables that have cracks or broken connectors.	
48	Knobs, dials, and switches	a. While making operating checks (items 49 through 54 below), observe that mechanical action of each knob, dial, and switch is smooth and free of external or internal binding. b. Tighten any loose knobs.	
	POWER-ON INSPECTION, DIRECTION FINDER SET AN/ARN-83		
49	AD circuit breakers	a. Depress FAD circuit breakers b. Set control unit function switch to ANT. Note that front panel tuning meter and FREQUENCY dial window are lighted.	Para 2-11, sequence No. 49.
50	C-1611(*)/AIC	Set NAV receivers switch to up (on) position.	
51	GAIN control	Rotate control clockwise and listen for noise in headset or speaker.	Para 2-11, sequence No. 51.
52	Range switch and TUNE control.	a. Set range switch to each of the three frequency ranges, and tune to a radio station. Check to see that range switching takes place and dial indicates correct frequency range. b. Note that tuning meter indicates signal strength and that audio can be heard in headset.	Para 2-11, sequence No. 52.
53	BFO-OFF switch	Set BFO-OFF switch to BFO. Tune to a radio station and listen for beat notes in a headset. Zero beat on station and note that sound is cut off.	Para 2-11, sequence No. 53.

Sequence No.	Item	Procedure	References
54	LOOP and function switches.	*a.* With function switch set to ANT, tune to a radio station of known bearing. *b.* Set function switch to LOOP. Using LOOP switch, rotate bearing indicator pointer for an aural null in headset. Note that the bearing indicator pointer will indicate two nulls displaced 180° apart. *c.* Set LOOP switch to center position, and set function switch to ADF. Note that bearing indicator pointer rotates and shows bearing of radio station (one null).	Para 2-11, sequence No. 54.
	POWER-OFF INSPECTION, ATTITUDE INDICATOR SYSTEM		
55	Cable connectors	Check all connections to all components of the attitude indicator system to assure they are clean, intact, and not loose-fitting.	
56	Intercabling	Check all intercabling for cracks and breaks. Replace cables that have cracks or broken connectors.	
57	Exterior surfaces	Remove all dirt, grease and moisture from all exterior surfaces as required. Inspect for scratched paint, missing screws, and bent or broken hardware. Repair as necessary.	
58	Indicator	Check that indicator is in good condition and that glass surface is clean and not cracked or damaged.	
59	Knobs, dials, and switches.	Check each control for proper mechanical action. Observe that mechanical action is positive without backlash, binding, or scraping.	
	POWER-ON INSPECTION, ATTITUDE INDICATOR SYSTEM		
60	Attitude indicator circuit breakers.	Open both pilot's and gunner's attitude indicator circuit breakers.	
61	Main inverter	Energize main inverter by placing INV switch (S3) in MAIN position.	
62	Circuit breaker panel	Close PLT ATT IND circuit breaker. Check that power warning flag on pilot's attitude indicator disappears within 1 minute after turn-on. Check that display erects to within 2 degrees in pitch and roll within 3 minutes after turn-on.	Para 2-11, sequence No. 62.
63	Pitch trim knob	Rotate pitch trim knob, on lower right corner of indicator face, to its clockwise limit. Check that horizon line deflects 10 to 20 degrees upward from its zero trim position (indicating a dive). Rotate pitch trim knob to its counterclockwise limit. Check that horizon line deflects downward 5 to 10 degrees from its zero trim position (indicating a climb). Return pitch trim knob to zero trim.	
64	Roll trim knob	Adjust roll trim for zero trim.	
65	Circuit breaker panel	Close GUNNERS ATT IND circuit breaker. Check that power warning flag on gunner's attitude indicator disappears within 1 minute.	

Sequence No.	Item	Procedure	References
66	Inverter	Turn off main inverter and, after a few seconds delay, turn on standby inverter. Check that pitch and roll axes remain stable within ±1 degree. Turn off standby inverter.	
	POWER-OFF INSPECTION, GYROMAGNETIC COMPASS SET AN/ASN-43		
67	Cable connectors	Check all connections to all components of the AN/ASN-43 and the additional equipment required, and assure that they are clean, intact, and not loose-fitting.	
68	Intercabling	Check all intercabling for cracks and breaks. Replace cables that have cracks or broken connectors.	
69	Exterior surfaces	Remove all dirt, grease, and moisture from all exterior surfaces as required. Check general condition of each component. Inspect for scratched paint, missing screws, and bent or broken hardware. Repair as necessary.	
70	Indicators and controls	Check to see that the indicators are in good condition and that their glass surfaces are clean, not cracked or damaged.	
71	Knobs, dials, and switches	Check each control for proper mechanical action. Observe that the mechanical action is positive without backlash, binding, or scraping.	
72	Mountings	Inspect seat and stability of mountings. Check for loose or missing hardware, and replace and tighten as necessary.	
	POWER-ON INSPECTION, GYROMAGNETIC COMPASS SET AN/ASN-43		
73	GYRO CMPS circuit breaker and main inverter.	Turn on main inverter and depress the GYRO CMPS circuit breaker. Power failure indicator on ID-998/ASN should disappear and panel lamps should light.	Para 2-11, sequence No. 73; TM 11-6605-202-12.
74	Slaving switch	Set MAG-DG switch to MAG position	TM 11-6305-202-12.
75	Synchronizing knob	Adjust the synchronizing knob on the ID-998/ASN until the annunciator is centered (nulled). The magnetic heading indicated by the scale dial on ID-998/ASN or ID-250/ASN should agree with a known magnetic heading.	Para 2-11, sequence No. 75, and TM 11-6605-202-12.
76	Latitude knob	Set local latitude when AN/ASN-43 is to be operated in DG mode.	TM 11-6605-202-12.
77	Latitude switch	Latitude switch to the N position for northern hemisphere operation or to the S position for southern hemisphere operation.	TM 11-6305-202-12.
78	Slaving switch	Set MAG-DG switch to DG. The annunciator is deenergized in this position and should return to center.	Para 2-11, sequence No. 78, and TM 11-6605-202-12.
79	Synchronizing knob	Adjust the synchronizing knob on the ID-998/ASN to set the scale to a known heading reference. The annunciator should remain in the center position.	TM 11-6605-202-12.

Sequence No.	Item	Procedure	References
80	GYRO CMPS circuit breaker.	Place to off position. Power failure indicator on ID-998/ASN should appear, and panel lamps should go out.	Para 2-11, sequence No. 80.
	POWER-OFF INSPECTION, TRANSPONDER SET AN/APX-44		
81	Control unit	Knobs should be properly secured to shafts and should not bind. Tighten loose knobs, and be sure that knobs do not rub against panels. Replace defective or broken knobs.	App A.
82	Radar receiver-transmitter	Check for loose and missing knobs. Knobs should be properly secured to shafts and should not bind. Tighten loose knobs, and be sure that knobs do not rub against panels. Replace defective or broken knobs.	
83	Mounting	Check for cracks, corrosion, loose attaching bolts or rivets, deterioration of rubber, and loose or missing bonding.	
	POWER-ON INSPECTION, TRANSPONDER SET AN/APX-44		
84	Iff circuit breaker	Depress IFF XPDR circuit breaker buttons.	
85	Control panel	Place the master control at STBY. The pilot light should light. (Allow 3 to 5 minutes for warm-up.)	Para 2-11, sequence No. 85.
86	Transponder set control	To test the set, use AN/APM-123	TM 11-6625-667-12.
87	Control panel	Place the meter control at OFF	Para 2-11, sequence No. 87.
	POWER-OFF INSPECTION, TRANSPONDER SET AN/APX-72		
88	Control unit	Knobs should be properly secured to shafts and should not bind. Tighten loose knobs, and be sure that knobs do not rub against panels. Replace defective or broken knobs.	App A.
89	Radar receiver-tranr-mitter.	Check for loose and missing knobs. Knobs should be properly secured to shafts and should not bind. Tighten loose knobs, and be sure that knobs do not rub against panels. Replace defective or broken knobs.	
90	Mounting	Check for cracks, corrosion, loose attaching bolts or rivets, deterioration of rubber, and loose or missing bonding.	
	POWER-ON INSPECTION, TRANSPONDER SET AN/APX-72		
91	Transponder control (transponder test procedure).	a. Make the following settings on the transponder control: (1) MASTER switch: NORM (2) IDENT: OUT (3) MODES 1,2,3/A, and C switches: ON (4) MODE 1 CODE control: any code (5) MODE 3/A CODE control: any code (6) MON-RAD switch: OUT b. Set the MODE 1 switch on the transponder control to the TEST position. The TEST LIGHT on the transponder control should light, indicating that the following conditions	Para 2-11, sequence No. 91.

Sequence No.	Item	Procedure	References
		exist: The transponder test set has initiated an interrogation of proper MODE 1 signals, and the transponder radio has recognized the interrogation and transmitted a reply. The transponder test set has evaluated the reply and is satisfied that the power and antenna VSWR are within specified limits.	
	NOTE Since altitude digitizer is not installed, MODE C cannot be checked.	*c.* Repeat steps *a* and *b* above on MODES 2 and 3.	
92	MODE 4 LIGHT	Press to test for proper operation.	
93	CODE HOLD switch	Check switch for smooth operation. Check for electrical continuity with Multimeter AN/URM-105.	
	POWER-OFF INSPECTION, RADIO SET AN/ARC-134		
94	Exterior surfaces	*a.* Clean control unit, receiver-transmitter, mounting. *b.* Inspect exposed metal surface for rust, corrosion, and bare spots.	App A.
95	Cables and connectors	*a.* Check all cables for evidence of chafing, cracking, or excessive strain.	
96	Radio receiver-transmitter.	*a.* Check to see that receiver-transmitter is securely mounted. *b.* Check the meter for dirty or broken glass. *c.* Check to see that all controls operate smoothly with no binding.	
97	Mounting	Check to see that the mounting is securely fastened to the helicopter frame or rack. Check to see that the groundstraps are secure and that the shock isolators work smoothly.	
98	Control unit	*a.* Check to see that the control unit is securely mounted. *b.* Check the controls for smooth mechanical action, and check to see that the nuts are tight.	
	POWER-ON INSPECTION, RADIO SET AN/ARC-134		
99	VHF COMM OFF/PWR switch.	*a.* Depress circuit breaker *b.* Set OFF/PWR switch to PWR position. The indicator dials should glow.	Para 2-11, sequence No. 99.
100	Receiver-transmitter meter switch.	*a.* Set receiver-transmitter meter switch to LINE V position. Meter shall indicate approximately 27 volts. *b.* Set receiver-transmitter meter switch to REG SUP position. Meter shall indicate approximately 20 volts.	Para 2-11, sequence No. 100.
101	COMM TEST switch	*a.* Set VHF COMM frequency selectors on the control unit to a frequency at which no signal is heard in the headset. Press the COMM TEST switch and background noise will be heard in headset.	Para 2-11, sequence No. 101.

Sequence No.	Item	Procedure	References
		b. Set receiver-transmitter meter switch to AGC position. Meter shall indicate approximately 0.05 (1 scale division).	
102	FVH COMM frequency selectors.	Set the VHF COMM frequency selectors to the frequency of the control tower, and contact the control tower for a COMM check. Control tower should receive a clear and audible transmission, and reception from tower should be clear and audible.	Para 2-11, sequence No. 102.
103	VOL (volume) control	Set VOL control to a desired audio level when receiving tower transmission. VOL control on the control unit varies the audio level.	Para 2-11, sequence No. 103.
104	VHF COMM OFF/PWR switch	Set OFF/PWR switch to OFF position. Indicator dials shall not glow.	Para 2-11, sequence No. 104.
	POWER-OFF INSPECTION, AC INVERTERS		
105	Exterior surfaces	*a.* Clean inverter. *b.* Inspect exposed metal surfaces for rust, corrosion, and bare spots.	
106	Cables and connectors	*a.* Check cables for evidence of chafing, cracking, or excessive strain. Refer to higher maintenance category for replacement. *b.* Check electrical connectors for dents, cracks, or improper mating.	
107	Inverter	Check to see that inverter is securely mounted.	
	POWER-ON INSPECTION, AC INVERTERS		
108	INV circuit breaker	Depress INV MAIN AND INV STBY circuit breakers on the DC circuit breaker panel:	
109	Ac power control panel	*a.* Place inverter switch in MAIN ON or SPARE ON position. *b.* Inverter should start	*a.* None. *b.* Para 2-11, sequence No. 109.
110	INST Inverter	*a.* INV switch to OFF position *b.* Caution light should illuminate *c.* Place INV switch in STANDBY position. Check that INST INVERTER caution light is extinguished and that AC instruments are energized. Check that standby inverter is energized and main inverter is de-energized. Check for proper AC voltage output. *d.* Place INV switch (S3) to the OFF position. Check that INST INVERTER light illuminates.	*a.* Para 2-11, sequence No. 110. *b.* Para 2-11, sequence No. 110. Voltage may be monitored at engine vibration meter receptacle, located on gunner's left console.
	POWER-OFF INSPECTION, STABILITY AND CONTROL AUGMENTATION SYSTEM (SCAS)		
111	Exterior surface	*a.* Clean dust, dirt, and loose particles from exterior. *b.* Inspect exposed metal surfaces for rust, corrosion, and bare spots. *c.* Check for broken panel lights and panel window glass.	
112	Cables and connectors	*a.* Check cables for evidence of chafing, cracking, or excessive strain.	

Sequence No.	Item	Procedure	Reference
		b. Check electrical connectors for dents, cracks, or improper mating.	
POWER-ON INSPECTION, STABILITY AND CONTROL AUGMENTATION SYSTEM (SCAS)			
113	SCAS circuit breaker	a. Depress SAS PWR circuit breaker on dc circuit breaker panel. b. Depress SAS PWR circuit breaker on ac circuit breaker panel.	
114	POWER switch	a. Set power switch on control panel to POWER b. NO GO indicator lamps should light for approximately 30 seconds and go out.	Para 2-11, sequence No. 114.
115	Control panel switches PITCH, ROLL, and YAW.	a. Set control panel switches PITCH, ROLL, and YAW to up position (engaged). b. PITCH, ROLL, and YAW switches should remain in up position (engaged).	Para 2-11, sequence No. 115.
116	Pitch servo actuator	a. Move cyclic stick forward and aft b. Pitch servo actuator output piston should move.	Para 2-11, sequence No. 116.
117	Roll servo actuator	a. Move cyclic stick left and right b. Roll servo actuator output piston should move.	Para 2-11, sequence No. 117.
118	Yaw servo actuator	a. Move pedals forward and aft b. Yaw servo actuator output piston should move.	Para 2-11, sequence No. 118.
119	Sensor amplifier unit	a. Remove mounting screws from sensor amplifier unit. Raise front (side with ACTR TEST switch) of sensor amplifier unit slowly. b. Swashplate should tilt forward and aft as front of sensor amplifier unit is raised or lowered, and pitch actuator piston should extend and retract.	Para 2-11, sequence No. 119.
120	Sensor amplifier unit	a. Raise right side (side with fuse) of sensor amplifier unit. b. Swashplate should tilt left and right (roll actuator piston extends and retracts) as sensor amplifier unit is raised or lowered.	Para 2-11, sequence No. 120.
121	Sensor amplifier unit	a. Rotate sensor amplifer unit above its yaw axis. b. The tail rotor blade pitch angle will change, and the yaw actuator piston extends and retracts as sensor amplifier unit is rotated.	Para 2-11, sequence No. 121.
122	Emergency disengage switch (cyclic).	a. Reinstall sensor amplifier unit b Depress emergency disengage switch on cyclic stick. All actuators center and lock, and actuator pistons do not extend or retract when helicopter controls are moved.	Para 2-11, sequence No. 122.
123	Power switch	Set POWER switch to OFF	Para 2-11, sequence No. 123.
124	SAS PWR circuit breakers	Open circuit breakers	Para 2-11, sequence No. 124.
POWER-OFF INSPECTION, CONTROL INDICATOR C-8157/ARC			
125	Exterior surfaces	a. Clean control unit. b. Inspect exposed metal surfaces for rust, corrosion, and bare spots.	

Sequence No.	Item	Procedure	Reference
126	Cables and connectors	Check all cables for evidence of chafing, cracking, or excessive strain. Refer to higher category maintenance for replacement. Check all electrical connectors for dents, cracks, or improper mating.	
127	C-8157/ARC	a. Check to see that the control unit is securely mounted. b. Check the controls for smooth mechanical action and check to see that the knobs are tight.	
	POWER-ON INSPECTION, CONTROL INDICATOR C-8157/ARC		
128	C-8157/ARC circuit breaker.	With TSEC/KY-28 installed, depress KY-28 CODE R circuit breaker.	
129	POWER ON Switch	Set the C-8157/ARC POWER ON switch to ON. **CAUTION** The POWER ON switch must be in the ON position, regardless of the mode of operation, whenever the C-8157/ARC is installed in the aircraft.	
130	AN/ARC-54	a. Accomplish sequences 23, 24, and 25 (procedures are the same). b. When power is initially applied, an automatic alarm procedure is initiated. A constant tone is heard in the headset and, after approximately 2 seconds, the constant tone will change to an interrupted tone.	
131	Push-to-talk switch	a. Depress and release the push-to-talk switch. b. The interrupted tone will no longer be heard, and the circuit will be in a standby condition ready for either transmission or reception. **CAUTION** No traffic will be passed if the interrupted tone is still heard after depressing and releasing the push-to-talk switch.	Para 2-11, sequence No. 131.
	POWER-ON INSPECTION PROXIMITY WARNING FACILITY YG-1054		
132	Circuit breaker for proximity warning	Press circuit breaker for proximity warning facility.	None
133	Receiver-Transponder	Set POWER switch ON and wait at least one minute Power lamp lights. NOTE Two types of ground operational tests are possible: a transponder ground test and a confidence test. The transponder ground checkout uses a remote ground transponder. The confidence test is a go no-go type check (self-test) that is normally performed in flight. and can also be performed on the ground. Both types of tests are covered.	Para 2-11, sequence No. 133.

Sequence No.	Item	Procedure	References
134	Receiver-Transponder	For the confidence test set the TRANSPONDER GND TEST/CONFIDENCE TEST switch to confidence test. The receiver/transponder ABOVE, EQUAL and BELOW indicator lamps should alternately flash on and off and a pulsing audio alarm should be heard in the pilot's and gunner's headsets.	Para 2-11, Item No. 134.
135	Receiver-Transponder	a. For the transponder ground test, place the Ground Transponder Tester UG2330AA01 within line of sight of the aircraft. Distance up to 3000 feet may be used. Set the power switch ON. b. In the aircraft, set the TRANSPONDER GND TEST/CONFIDENCE TEST switch to TRANSPONDER GND TEST position. If the Proximity Warning System is operating properly, the BELOW, EQUAL and ABOVE indicator lamps will flash in cycle and the audio alarm should be heard in the pilot's and gunner's headsets. The ground transponder simulates another helicopter that cycles from 180 feet above to 180 feet below ground level once every 16 seconds. c. Set the POWER switch OFF. **NOTE:** The signal from the Ground Transponder will be decoded only by those receiver-transponders which are in the transponder ground test condition.	Para 2-11, Item No. 135.
		BATTERY	
136	Battery output voltage	a. Turn off the auxiliary power unit that was connected in sequence No. 10, and observe the indication on the VOLTS portion of the voltmeter on instrument panel. b. The VOLTS indication should be at least 24.	
		POSTOPERATIONAL SHUTDOWN	
137	Helicopter ac power ...	Set the INVTR switch to center position to de-energize the helicopter ac electrical circuits.	
138	Auxiliary power unit	Disconnect auxiliary power unit that was connected in sequence No. 10.	Para 2-4.
139	External hydraulic power source.	Disconnect external power source that was connected in sequence No. 12.	TM 55-1520-221-23.

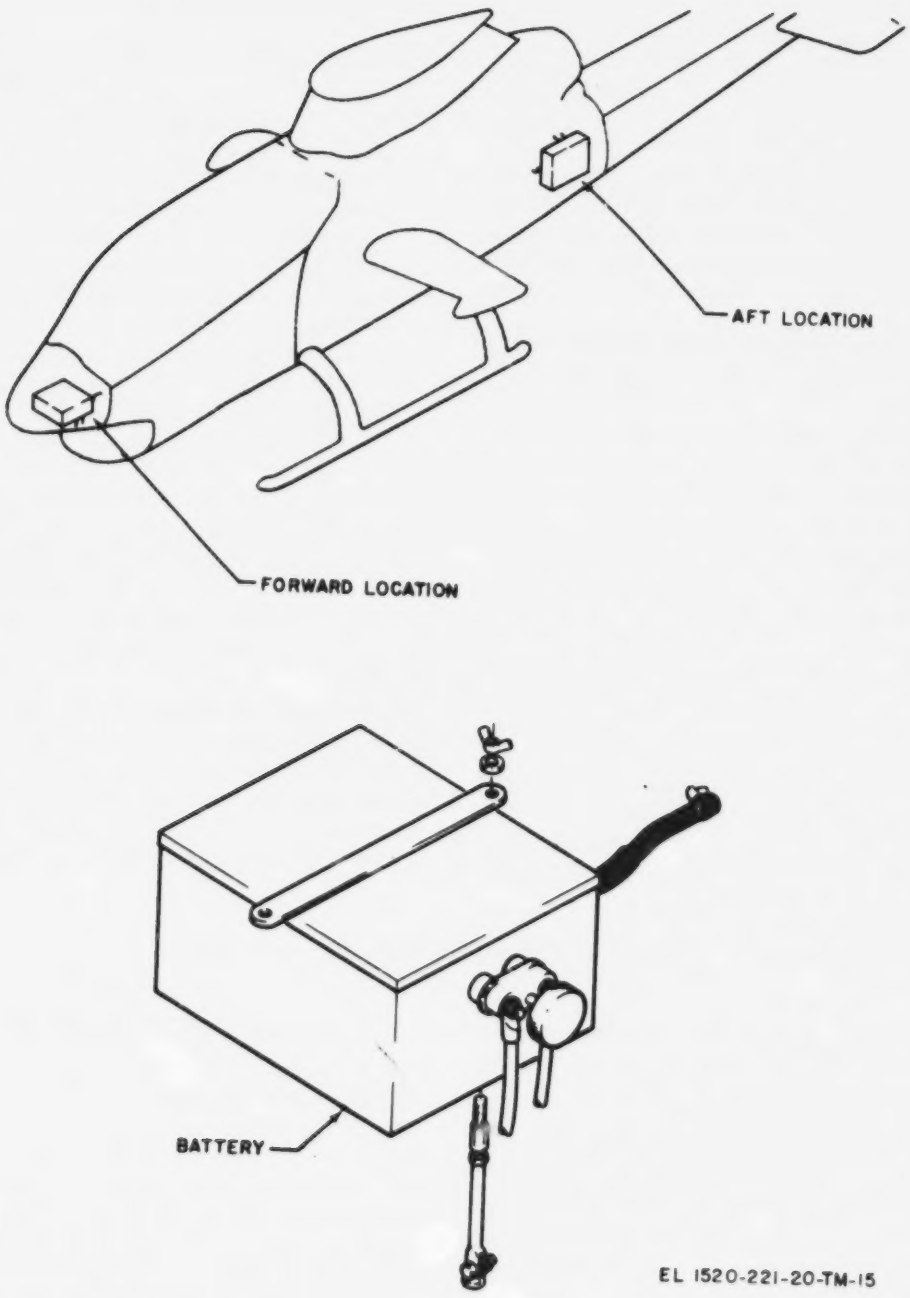


Figure 2-3. Battery locations.

2-8. General Cleaning and Repairing Instructions

Inspect all items of each configuration for dirt and corrosion. The surfaces should be free of dirt, grease, lint, and fungus.

a. Remove moisture, dust, and loose dirt with a clean, soft cloth.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or opened flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

b. Remove grease, fungus, and ground-in dirt with a cloth dampened (not wet) with TRICHLOROTRIFLUOROETHANE.

c. Remove dust and lint from the exposed connectors with a soft, bristle brush; remove moisture with a dry cloth.

d. Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. For painting instructions and materials, refer to SB 11-573, and to the applicable cleaning and refinishing practices specified in TB 43-0118. Use lacquer for all items originally painted with lacquer. Use enamel base paint for all items originally painted with enamel base paint.

CAUTION

Do not apply lqcquer to enamel painted surfaces. Lacquer will loosen the existing enamel.

2-9. Battery Maintenance

Maintenance procedures for nickel-cadmium batteries are contained in TM 11-6140-203-15-2, Operator's, Organizational, field and depot maintenance manual including repair parts and special tools list: Aircraft nickel-cadmium batteries.

2-9.1. Organizational Maintenance of Rotary Inverters (PU-542A/A or PU-543/A).

Every 200 flight hours, clean and inspect the exterior, inspect brushes for wear, and check output voltage and frequency. To indicate maximum permissible wear, the brushes have a 1/32 inch wide wear mark (groove). The wear mark on the preferred brushes is a diagonal groove in the bottom width of the brush; in some other brushes it is a parallel groove in the top edge of the brush. Under normal operating conditions, wear down to the end of the wear mark (approximately half the original brush length) will yield a minimum of 500 hours of service at full load. To avoid improper installation of brushes, it is important to inspect and reinsert the brushes one at a time. If brushes are worn down to the wear mark, remove the inverter, and send to the next higher level for installation of new brushes.

Section III. TROUBLESHOOTING

2-10. General Troubleshooting Information

Troubleshooting of the aircraft electronic equipment configuration supplements the checks in the periodic preventive maintenance checks and services chart (para 2-7). To troubleshoot the equipment, perform all functions starting with sequence No. 4 in the periodic preventive maintenance checks and services chart, and proceed through the items until an abnormal condition or result is observed. When an abnormal condition or result is observed, note the sequence number and turn to the corresponding sequence number in the troubleshooting chart (para 2-11). If the corrective measures indicated do not result in correction of the trouble, higher category maintenance is required. Paragraphs 2-14 through 2-59 contain step-by-step instructions for performing equipment removal and replacement, and paragraphs 2-62, 2-63, and 2-64 contain adjustments to be performed after the equipment is replaced.

2-11. Troubleshooting Chart.

Sequence No.	Symptom	Probable trouble	Correction
13	No panel lamps light on C-1611(*)/AIC (INT).	a. Primary 28-volt dc not applied to C-1611(*)/AIC.	a. Check circuit breaker; replace if defective.
		b. Panel lights burned out	b. Replace panel lights (TM 11-5831-201-15).
14	No sidetone or interphone signals heard when pilot's cyclic stick ics switch is operated.	a. Defective pilot's headset microphone.	a. Replace pilot's headset microphone.
		b. Defective ics switch	b. Replace pilot's ics radio switch (para 2-53).
15	No sidetone or interphone signals heard when gunner's cyclic stick ics switch is operated.	a. Defective gunner's headset microphone.	a. Replace gunner's headset-microphone.
		b. Defective ics switch	b. Replace gunner's ics switch (para 2-53).
16	No sidetone or interphone signals heard when gunner's foot switch is operated.	a. Defective gunner's headset microphone.	a. Replace gunner's headset microphone.
		b. Defective foot switch	b. Replace gunner's foot switch (para 2-52).
17	C-1611(*)/AIC control (PVT)	See sequence No. 13, 14, 15, and 16.	See sequence No. 13, 14, 15, and 16.
23	AN/ARC-54 or AN/ARC-131 panel lamps do not light.	a. Open circuit breaker	a. Reset or replace as necessary.
		b. Loose panel light	b. Tighten.
		c. Panel light burned out	c. Replace as necessary.
24	Blower does not operate	a. Open circuit breaker	a. Reset or replace as necessary.
		b. Loose connections	b. Tighten all connections.
		c. Defective RT-348/ARC-54, or RT-823/ARC-131.	c. Replace RT-348/ARC-54 or RT-823/ARC-131 (para 2-20).
25	Background noise	a. Squelch improperly set	a. Adjust squelch control.
		b. Receiver-transmitter defective.	b. Replace RT-348/ARC-54 or RT-823/ARC-131 (para 2-20).
		c. Interphone system defective	c. Replace or repair as necessary.
26	No audio	a. Defective volume control	a. Replace control panel (para 2-19).
		b. Loose antenna connection.	b. Tighten all connections.
		c. Defective RT-348/ARC-54 or RT-823/ARC-131.	c. Replace RT-348/ARC-54 or RT-823/ARC-131 (para 2-20).
27	No transmission	a. Open circuit breaker	a. Reset or replace as necessary.
		b. Loose connection	b. Tighten all connections.
		c. Defective RT-348/ARC-54 or RT-823/ARC-131.	c. Replace RT-348/ARC-54 or RT-823/ARC-131 (para 2-20).
		d. Defective ics switch	d. Replace ics switch.
28	Radio set does not operate with mode control set to HOME.	a. Receiver signal strength inadequate.	a. Change frequency to local FM station.
		b. Homing antenna	b. Check for proper connections.
		c. Defective control unit	c. Remove and replace C-3835/ARC-54 or C-7088/ARC-131 (para 2-19).
		d. Defective receiver-transmitter.	d. Remove and replace RT-348/ARC-54 or RT-823/ARC-131.

Sequence No.	Symptom	Probable trouble	Correction
		e. Defective homing indicator	e. Refer to applicable aircraft maintenance manual for replacement.
29	Power remains on when mode control switch is set to off.	Defective mode control switch	Replace C-3835/ARC-54 or C-7088/ARC-131 (para 2-19).
34	AN/ARC-51BX external blower does not operate.	a. External blower defective	a. Replace external blower.
		b. Open circuit breaker	b. Reset or replace as necessary.
35	No background noise	a. Defective headset	a. Replace headset.
		b. Defective control unit	b. Replace control unit.
		c. Defective RT-742(*)/ARC-51BX.	c. Replace receiver-transmitter.
36	Headset audio level cannot be controlled by radio set control.	Defective VOL control	Replace control unit (para 2-25).
37	No audio tone in the headset during channel-changing cycle.	Defective receiver-transmitter.	Replace receiver-transmitter (para 2-26).
38	Transmitter power output is less than 16 watts.	a. Defective receiver-transmitter.	a. Replace receiver-transmitter (para 2-26).
		b. Defective reflectometer	b. Replace reflectometer.
39	Reflected power indication is more than 5 watts.	a. Improper cable connections between receiver-transmitter and antenna.	a. Check connections or replace cable if defective.
		b. Defective receiver-transmitter.	b. Replace receiver-transmitter (para 2-26).
		c. Defective reflectometer	c. Replace reflectometer.
40	No sidetone audio in headset during transmission.	Defective receiver-transmitter	Replace receiver-transmitter (para 2-26).
41	Radio set fails to provide two-way communications on all test frequencies.	Defective receiver-transmitter	Replace receiver-transmitter (para 2-26).
42	No guard receiver audio output	Defective receiver-transmitter.	Replace receiver-transmitter (para 2-26).
43	SQ DISABLE switch does not function properly.	Defective SQ DISABLE switch, or defective receiver-transmitter.	Replace defective C-6287/ARC-51BX or RT-742(*)/ARC-51BX (para 2-25 and 2-26).
44	Preset channel selection inoperative.	Defective reciver-transmitter or control unit.	Replace as necessary (para 2-25 and 2-26).
49	AN/ARN-83		
	a. One or more panel lamps do not light.	a. Lamp or lamps burned out	a. Replace lamp as necessary.
	b. Front panel, tuning meter, and dial window not lighted.	b. Open circuit breaker	b. Reset or replace as necessary.
51	No noise in headset, but front panel is lighted.	a. Defective headset	a. Replace headset.
		b. Defective receiver	b. Replace R-1391/ARN-83 (para 2-33).
52	a. Receiver does not switch frequency range.	a. Defective control unit	a. Replace C-6899/ARN-83 (para 2-32).
	b. Tuning meter inoperative, but sound can be heard.	b. Defective receiver	b. Replace R-1391/ARN-83 (para 2-33).
		Meter defective	Replace C-6899/ARN-83 (para 2-32).

Sequence No.	Symptom	Probable trouble	Correction
53	No beat notes can be heard in headset.	Defective BFO	Replace R-1391/ARN-33 (para 2-33).
54	a. Null cannot be obtained in loop mode.	a. Defective loop switch	a. Replace C-6899/ARN-83 (para 2-32).
		b. Malfunction in receiver	b. Replace R-1391/ARN-83.
		c. Defective loop antenna or RF inductance compensator.	c. Check Loop Antenna Type 137A-7 by substitution.
	b. Positioning LOOP switch has no effect on bearing pointer, but sound can be heard in headset.	a. Defective LOOP switch	a. Replace C-6899/ARN-83 (para 2-32).
		b. Defective loop antenna	b. Replace Loop Antenna Type 137A-7 (para 2-36).
		c. Cable between loop antenna and receiver loose.	c. Tighten connectors.
	c. Bearing indicator pointer inoperative in adf and loop modes.	a. Defective bearing indicator	a. Replace ID-998/ASN (para 2-34) or ID-250/ARN (para 2-35).
		b. Malfunction in loop servo system in receiver.	b. Replace R-1391/ARN-83 (para 2-33).
	d. Bearing indicating pointer rotates in one direction only and does not return to center.	c. Loop switch defective	a. Replace C-6899/ARN-83 (para 2-32).
		b. Defective receiver	b. Replace R-1391/ARN-83 (para 2-33).
	e. Bearing indicator pointer has slow response.	Defective receiver	Replace R-1391/ARN-83 (para 2-32).
62	a. Both pilot's and gunner's attitude indicators fail to operate.	a. Inadequate power supply	a. Investigate inverter output.
		b. Defective circuit breaker	b. Replace circuit breaker.
		c. Faulty wiring or loose connections.	c. Check circuit schematic and correct as necessary.
		d. Defective CN-1314/A	d. Replace gyro (para 2-41).
	b. Either pilot's or gunner's attitude indicator display fails to erect to within 2 degrees in pitch and roll within 3 minutes after turn on.	a. Defective attitude indicator.	a. Refer to higher category of maintenance.
	c. Attitude system functions properly but power failure flag does not lift.	a. Defective attitude indicator	a. Refer to higher category of maintenance.
73	Power failure indicator does not disappear and panel lamps do not light.	a. Defective ID-998/ASN	a. Replace ID-998/ASN (para 2-34).
		b. Defective inter-cabling or connector.	b. Replace cabling or connector.
		c. Open circuit breaker	c. Reset or replace circuit breaker.
75	Annunciator will not go to center or null with MAG-DG switch to MAG position.	a. Defective MAG-DG switch	a. Replace MAG-DG switch.
		b. Defective CN-998/ASN	b. Replace CN-998/ASN (para 2-39).
		c. Defective latitude switch	c. Replace CN-998/ASN.
78	Annunciator will not remain in center position with MAG-DG switch at DG.	a. Defective MAG-DG switch	a. Replace MAG-DG switch.
		b. Defective latitude switch	b. Replace CN-998/ASN (para 2-39).
80	Power failure indicator does not appear and panel lamps do not extinguish.	a. Defective circuit breaker	a. Repair or replace circuit breaker.
		b. Defective ID-998/ASN	b. Replace ID-988/ASN (para 2-34).

Sequence No.	Symptom	Probable trouble	Correction
85	Panel light fails to light	a. Open circuit breaker	a. Reset or replace.
		b. Defective master control switch.	b. Replace C-2714/APX-44 (para 2-45).
87	Panel lights do not go out	a. Defective master control switch.	a. Replace C-2714/APX-44 (para 2-45).
		b. Defective circuit breaker	b. Replace circuit breaker
91	a. Transponder set will not energize.	a. No power input	a. Check helicopter power source.
		b. Defective master control	b. Check control continuity in STBY, LOW, NORM, and EMER.
		c. Defective interconnect cable	c. Check continuity.
		d. Defective receiver-transmitter.	d. Replace RT-859/APX-72 receiver-transmitter (para 2-47).
	b. No output in any mode of operation.	a. No aircraft power	a. Check that C-6280(P)/APX panel is lighted. Apply aircraft power.
		b. MASTER control C-6820(P)/APX set to OFF or STDBY.	b. Check MASTER control position. Place in LOW or NORM.
		c. Defective cable or loose connections.	c. Check cable and connections. Replace or tighten as applicable.
		d. Defective fuse in RT-859/APX-72.	d. Check and replace defective fuse.
		e. Defective RT-859/APX-72	e. Replace RT-859/APX-72 (para 2-47).
	c. Output low or intermittent in any or all modes of operation.	a. Power supply in RT-859/APX-72 abnormal.	a. Replace RT-859/APX-72 (para 2-47).
		b. RT-859/APX-72 coder operations abnormal.	b. Replace RT-859/APX-72 (para 2-47).
	d. No output from a single mode. All others normal.	a. Applicable mode enable switch (C-6280(P)/APX) in OUT or TEST position.	a. Check that applicable mode enable switch is set to ON.
		b. Improper code setting in applicable mode switch.	b. Check for proper code setting.
99	Dial indicators do not glow	a. Defective circuit breaker	a. Reset or replace circuit breaker.
		b. Defective VHF COMM OFF/PWR switch.	b. Replace control unit.
100	No meter indication on receiver-transmitter meter in the LINE V or REG SUP position.	a. Defective meter switch	a. Replace RT-857/ARC-134 (para 2-30).
		b. Defective meter	b. Replace RT-857/ARC-134 (para 2-30).
101	No background noise heard in headset and no meter indication on receiver-transmitter meter in the AGC position.	a. Defective COMM TEST switch.	a. Replace C-7197/ARC-134 (para 2-29).
		b. Defective squelch circuit in the transceiver.	b. Replace RT-857/ARC-134 (para 2-30).
102	No transmission or reception from the receiver-transmitter.	a. Defective transmitter	a. Replace RT-857/ARC-134 (para 2-30).
		b. Defective receiver	b. Replace RT-857/ARC-134 (para 2-30).
		c. Defective antenna	c. Replace AT-1108/ARC (para 2-27).

Sequence No.	Symptom	Probable trouble	Correction
103	Audio level cannot be varied by VOL control.	Defective VOL control	Replace Control, Radio Set C-7197/ARC-134 (para 2-29).
104	Dial indicators continue to glow.	Defective VH COMM OFF/PWR switch.	Replace C-7197/ARC-134 (para 2-29).
109	a. Main inverter (MG1) fails to operate.	Open circuit breaker	Reset circuit breaker.
		Faulty wiring or connections in switch (S3) or power circuits.	With power off, check continuity of wiring and tighten connections.
			Check for 28 volts dc on both main and spare switch terminals. If voltage is not present, refer to higher category maintenance.
		Defective main inverter (MG1)	Replace main inverter (para 2-57 or 2-58.1).
	b. Standby inverter (MG3) fails to operate.	Open circuit breaker	Reset circuit breaker.
		Faulty wiring or connections in switch (S3) or power circuits.	Check continuity or wiring. Repair wiring and tighten connections.
		Poor bonding to ground	Clean and tighten connections.
		Faulty inverter changeover relay (K9).	Refer to higher category maintenance.
		Defective inverter (MG3)	Replace inverter (para 2-58).
110	a. Inverter (MG1 and MG3) operates but no voltage to instrument.	Faulty wiring	Check continuity of wiring; repair wiring.
		Defective inverter changeover relay (K9).	Refer to higher category maintenance.
		Faulty inverter (MG1 or MG3).	Check for 115-volt ac output from inverter; replace faulty inverter.
	b. Improper inverter output voltage or frequency (main or standby).	Low output voltage	Check for proper input voltage to inverter; correct low primary voltage condition.
		Faulty inverter voltage regulator.	Check inverter output voltage and frequency with voltmeter and frequency meters; replace faulty inverter (para 2-57 or 2-58).
114	a. NO GO indicator lights do not illuminate.	a. Faulty bulbs	a. Check bulbs by press-to-test and replace as required.
		b. SAS PWR 28-volt dc circuit breaker inoperative.	b. Replace SAS PWR circuit breaker.
		c. SAS PWR 115-volt ac circuit breaker inoperative.	c. Replace SAS PWR circuit breaker.
		d. POWER switch inoperative	d. Replace control panel (para 2-55).
		e. 28-volt dc fuse (F1) on SCAS amplifier open.	e. Replace 28-volt dc (F1) fuse.
		f. Faulty wiring or connections in power circuits.	f. Check continuity of power circuit wiring and repair wire as required. Replace sensor amplifier unit if trouble is isolated to an internal malfunction (para 2-55).
	b. One or two NO GO indicator lights do not illuminate.	a. Faulty bulbs	a. Check appropriate bulbs by press-to-test, and replace as required.

Sequence No.	Symptom	Probable trouble	Correction
		b. Faulty control panel	b. Substitute control panel known to be good, and replace as required (para 2-55).
		c. Faulty sensor amplifier unit	c. Substitute sensor amplifier unit known to be good (para 2-55).
		d. Faulty wiring or connections	d. Repaire wire or connections.
	c. One or more NO GO indicator lights stay one after expiration of 30-second warm-up period.	a. Faulty servo actuator	a. Depress ACTR TEST switch. If NO GO light or lights go out, refer to higher category maintenance.
		b. Faulty rate gyro	b. Depress GYRO TEST switch. If NO GO light or lights go out, replace sensor amplifier unit (para 2-55).
		c. Roll No Go light pylon box not operative.	c. Inspect PCU wiring for condition; if good, change PCU.
		d. Faulty control channel assembly.	d. Substitute known to be good control channel assembly and replace if required.
		e. Faulty sensor amplifier unit.	e. Depress ACTR TEST switch. If NO GO light or lights remain lighted, replace sensor amplifier unit (para 2-55).
		f. Faulty wiring	f. Repair wire.
115	Control panel switches, PITCH, ROLL, and YAW will not stay in up position (engaged).	a. Faulty PITCH, ROLL or YAW switch.	a. Replace control panel (para 2-55).
		b. Faulty pilot's or gunner's disengage switch (cyclic).	b. Check continuity, and replace faulty switch.
		c. Faulty sensor amplifier unit	c. Replace sensor amplifier unit (para 2-55).
		d. Faulty wiring or connections	d. Repair wire or connection.
116	Pitch servo actuator output piston does not move.	a. Faulty pitch control motion transducer.	a. Check resistance from k to a of P710. Reading shall be 1000 ±100 ohms. Check resistance from p to a of P710. Reading shall be from approximately 0 to 1000 ohms as cyclic stick is moved forward and aft through the stick's full range of travel. If item is defective, refer to higher category maintenance.
		b. Faulty wiring or connections	b. Repair wiring.
		c. Faulty pitch control channel assembly.	c. Replace faulty pitch control channel assembly.
		d. Faulty sensor amplifier unit	d. Measure voltage between pins E and F of P707. Reading shall be 0 ±6 volts dc. If the sensor amplifier unit is rotated about the pitch axis or if the cyclic stick is displaced, the voltage indication shall move toward, but not exceed ±12 volts dc. Replace faulty sensor amplifier unit (para 2-55).
		e. Faulty wiring	e. Repair wiring.

Sequence No.	Symptom	Probable trouble	Correction
		f. Faulty pitch solenoid valve ----	f. Check for 28 volts dc between pins A and B of P703. Replace faulty control panel (para 2-55). NOTE If the preceding step does not correct the fault, the pitch solenoid valve must be checked for evidence of hydraulic pressure. Refer to higher category maintenance.
		g. Faulty pitch servo actuator ---	g. Check resistance from E to F of J707. Reading shall be 2000 ±200 ohms. Refer to higher category maintenance.
117	Roll servo actuator output piston does not move.	a. Faulty roll control motion transaducer.	a. Check resistance from r to m of P710. Reading shall be 1000 ±100 ohms. Check resistance from c to r of P710. Reading shall be approximately 0 to 1000 ohms as the cyclic stick is moved left or right through the stick's full range of travel. Refer to higher category maintenance.
		b. Faulty wiring or connections ..	b. Repair wiring.
		c. Faulty roll control channel assembly.	c. Replace faulty roll control channel assembly.
		d. Faulty sensor amplifier ----	d. Measure voltage between pins E and F of P708. Reading shall be 0 ±6 volts dc. If the sensor amplifier unit is rotated about the roll axis or if the cyclic stick is displaced, the voltage indication shall move toward but not exceed ±12 volts dc. Replce faulty sensor amplifier unit (para 2-55).
		e. Faulty wiring or connections ..	e. Repair wiring and connections.
		f. Faulty roll solenoid valve ----	f. Check for 28 volts dc between pins A and B of P702. Replace faulty control panel (para 2-55). NOTE If the preceding step does not correct the fault, the roll solenoid valve hydraulic line must be checked for evidence of hydraulic pressure. Refer to higher category maintenance.
		g. Faulty roll servo actuator ----	g. Check resistance from E to F of J708. Reading shall be 2000 ±200 ohms. Refer to higher category maintenance.
118	Yaw servo actuator output piston does not move.	a. Faulty yaw control motion transducer.	a. Check resistance from t to S of P710. Reading shall be 1000

Sequence No.	Symptom	Probable trouble	Correction
			±100 ohms. Check resistance from t to N of P710. Reading shall be approximately 0 to 1000 ohms as the pedals are moved through their full ranges of travel. Refer to higher category maintenance.
		b. Faulty Yaw Control Channel Assy.	b. Replace faulty Yaw Control Channel Assembly.
		c. Faulty sensor amplifier unit	c. Measure voltage between pins E and F of P709. Reading shall be 0 ±6 volts dc. If the sensor amplifier unit is rotated about the yaw axis or if the cyclic stick is displaced, the voltage indication shall move toward but not exceed ±12 volts dc. Replace faulty sensor amplifier unit (para 2-55).
		d. Faulty wiring or connections	d. Repair wiring and connections.
		e. Faulty yaw solenoid valve	e. Check for 28 volts dc between pins A and B of P701. Replace faulty control panel (para 2-55). **NOTE** If the preceding step does not correct the fault, the yaw solenoid valve hydraulic line must be checked for evidence of hydraulic pressure. Refer to higher category maintenance.
		f. Faulty yaw servo actuator	f. Check resistance from E to F of J709. Reading shall be 2000 ±200 ohms. Refer to higher category maintenance.
119	No rate stabilization	a. Faulty sensor amplifier unit (pitch rate gyro).	a. Replace sensor amplifier unit (para 2-55).
		b. Faulty sensor amplifier unit	b. Measure voltage between pins E and F of P707. Reading shall be 0 ±6 volts dc. If the sensor amplifier unit is rotated about the pitch, roll, or yaw axis, or if the cyclic stick or pedals are displaced, the voltage indication shall move toward but not exceed ±12 volts dc. Replace faulty sensor amplifier unit (para 2-55).
		c. Faulty control channel assembly.	c. Replace faulty control channel assembly.
		d. Faulty pitch solenoid valve	d. Check for 28 volts dc between pins A and B of P703. Repair wiring or replace control panel as required (para 2-55).

Sequence No.	Symptom	Probable trouble	Correction
			NOTE If the preceding step does not correct the fault, the pitch solenoid valve hydraulic line must be checked for evidence of hydraulic pressure. Refer to higher category maintenance.
		e. Faulty pitch servo actuator	*e.* Check resistance from E to F of J707. Reading shall be 2000 ±200 ohms. Refer to higher category maintenance.
120	No rate stabilization	*a.* Faulty sensor amplifier unit (roll rate gyro).	*a.* Replace sensor amplifier unit (para 2-55).
		b. Faulty sensor amplifier unit	*b.* Measure voltage between pins E and F of P709. Reading shall be 0 ±6 volts dc. If the sensor amplifier unit is rotated about the pitch, roll, or yaw axis or if the cyclic stick or pedals are displaced, the voltage indication shall move toward but not exceed ±12 volts dc. Replace faulty sensor amplifier unit (para 2-55).
		c. Faulty control channel assembly.	*c.* Replace faulty control channel assembly.
		d. Faulty wiring or connection	*d.* Repair wiring and connections.
		e. Faulty roll solenoid valve	*e.* Check for 28 volts dc between pins A and B of P702. Replace faulty control panel (para 2-55).
			NOTE If the preceding step does not correct the fault, the roll solenoid valve hydraulic line must be checked for evidence of hydraulic pressure. Refer to higher category maintenance.
		f. Faulty roll servo actuator	*f.* Check resistance from E to F of J708. Reading shall be 2000 ±200 ohms. Refer to higher category maintenance.
121	No rate stabilization	*a.* Faulty sensor amplifier unit (yaw rate gyro).	*a.* Replace sensor amplifier unit.
		b. Faulty sensor amplifier unit	*b.* Measure voltage between pins E and F of P709. Reading shall be 0 ±6 volts dc. If the sensor amplifier unit is rotated about the pitch, roll, or yaw axis or if the cyclic stick or pedals are displaced, the voltage indication shall move toward but not exceed ±12 volts dc. Replace faulty sensor amplifier (para 2-55). Check resistance from P to a

Sequence No.	Symptom	Probable trouble	Correction
			of P710. Reading shall be approximately 0 to 1000 ohms as cyclic stick is moved forward and aft through the stick's full range of travel. Refer to higher category maintenance.
		c. Faulty sensor amplifier unit	*c.* Measure voltage between pins E and F of P707. Reading shall be 0 ±3 volts dc. If the sensor amplifier unit is rotated about the pitch axis or if the cyclic stick is displaced, the voltage indication shall move toward but not exceed ±12 volts dc. Replace faulty sensor amplifier unit (para 2-55).
		d. Faulty Control Channel Assembly.	*d.* Replace faulty Control Channel Assembly.
		e. Faulty wiring or connection	*e.* Replace wiring and connections.
		f. Faulty pitch solenoid valve	*f.* Check for 28 volts dc between pins A and B of P703. Replace faulty control panel (para 2-55).
			NOTE If the preceding step does not correct the fault, the pitch solenoid valve hydraulic line must be checked for evidence of hydraulic pressure. Refer to higher category maintenance.
		g. Faulty pitcher servo actuator	*g.* Check resistance from E to F of J707. Reading shall be 2000 ±200 ohms. Refer to higher category maintenance.
122	Emergency disengage switch (cyclic) will not disengage.	Shorted emergency disengage switch (cyclic).	Replace emergency disengage switch (cyclic) (para 2-53).
123	Power remains on	Shorter POWER switch	Replace SCAS control panel (para 2-55).
124	Circuit breaker will not open	Shorted SCAS circuit breaker	Replace SCAS circuit breaker.
	a. Excessive pylon oscillation with SCAS engaged.	*a.* Faulty wiring	*a.* Repair wiring.
		b. Faulty pylon compensator unit or pylon transducer.	*b.* Replace faulty compensator unit. Refer to higher category maintenance.
		c. Faulty engage switch	*c.* Replace control panel.
		d. Defective Solenoid Valve (K32, K33, K34).	*d.* Check for 28 volts dc between pins A and D of P703, 702, or 701. If no voltage present and channel will not disengage, replace solenoid valve.
	b. Intermittent operation.	*a.* Faulty wires	*a.* Repair wiring.
		b. Faulty sensor amplifier unit	*b.* Substitute known good sensor amplifier unit.

Sequence No.	Symptom	Probable trouble	Correction
		c. Faulty control motion transducer.	c. Substitute known good control motion transducer (MT1, MT2, MT3).
		d. Faulty Pylon Compensation Unit (AR2).	d. Replace faulty Pylon Compensation Unit (para 2-56).
		e. Faulty pylon transducer	e. Refer to higher category maintenance.
131	No secure voice transmission or reception.	Defective C-8157/ARC	Replace C-8157/ARC (para 2-19).
133	Receiver-transponder power on lamp does not light. NOTE The ABOVE, EQUAL, and BELOW lamps normally light and cycle one time when power is initially applied.	Panel lamp loose in socket or defective	Check panel lamp for proper seating and replace if necessary
134	Receiver-Transponder ABOVE, EQUAL, and BELOW lamps do not light when CONFIDENCE TEST switch is set to ON.	a. Panel lamps defective.	a. Replace panel lamps
		b. Receiver-transponder is defective.	b. Replace receiver-transponder
135	Receiver-Transponder ABOVE, EQUAL, and BELOW lamps do not cycle when TRANSPONDER GND TEST switch is set to ON using the ground transponder test set.	a. See item 133.	a. See item 133.
		b. Receiver-transponder defective.	b. Replace receiver-transponder.
		c. Defective antenna.	c. Replace antenna (para 2-59.1).
		d. Ground transponder test set.	d. Check ground transponder. Repair or replace as required

Section IV. ELECTRONIC EQUIPMENT CONFIGURATION REPAIRS

2-12. General Repair Techniques

Repair of the helicopter electronic equipment configuration at organizational maintenance consists of removal of defective major electronic equipment components and replacement of these components with serviceable components from maintenance float stock. When the troubleshooting procedures indicate that a component is defective, follow applicable removal procedures in this section. Replace the removed component with a known serviceable equivalent component. After the component has been replaced, install safety wiring on the mounting hardware and electrical connectors in the manner described in paragraph 2-60. If replacement of major components still does not correct the trouble, check the electronic equipment configuration wiring, and repair the wiring or cabling as required.

WARNING

Be sure that the auxiliary power unit is disconnected, that all radio circuit breakers are out, and that the BATTERY or BAT switch is OFF.

2-13. Coordinating Removal and Replacement

When removal or replacement of any component requires disassembly of any portion of the air-

frame, be sure to coordinate the removal or replacement with the airframe organizational maintenance man or the crew chief. Nomenclature or information descriptive of removed components must be entered on DA Form 2408–13, Aircraft Inspection and Maintenance Record.

2–14. Interphone Facility Component Removal and Replacement

The components of the interphone facility requiring removal and replacement at organizational maintenance area: the gunner's foot switch, the pilot's and gunner's microphone switches, and the pilot's and gunner's interphone controls. The removal and replacement procedures for these components are described in paragraphs 2–15, 2–52, and 2–53.

2–15. Removal and Replacement of Control, Intercommunications Set C–1611(*)/AIC (fig. 2–4 and 2–5)

a. Removal.

(1) Loosen the spring-lock fasteners that secure the distribution panel to the bracket assembly.

(2) Lift the distribution panel far enough from the bracket assembly to reach the spring-lock fasteners that secure the connector assembly to the rear of the distribution panel.

(3) Loosen the spring-lock fasteners, and remove the connector assembly from the rear of the distribution panel.

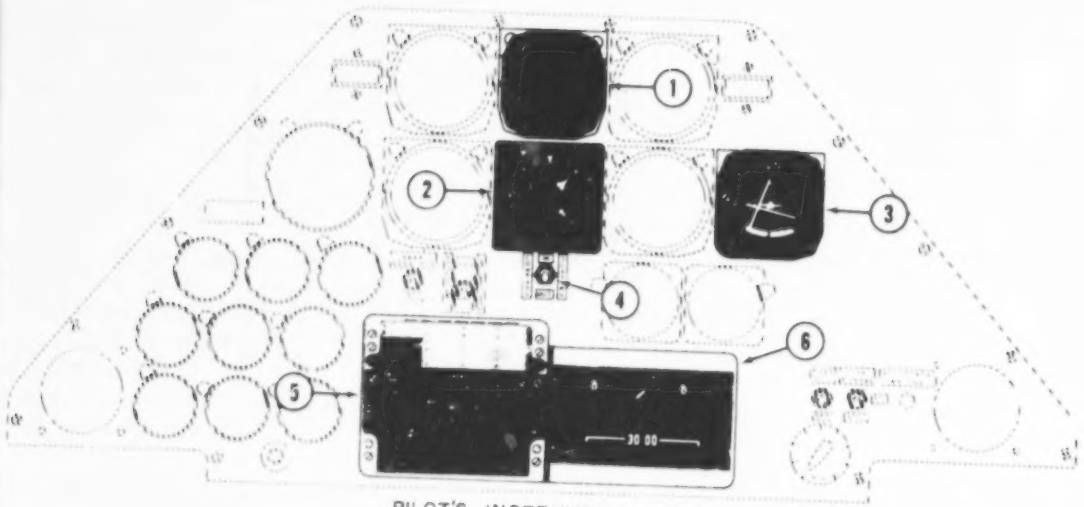
(4) Lift out the distribution panel.

b. Replacement.

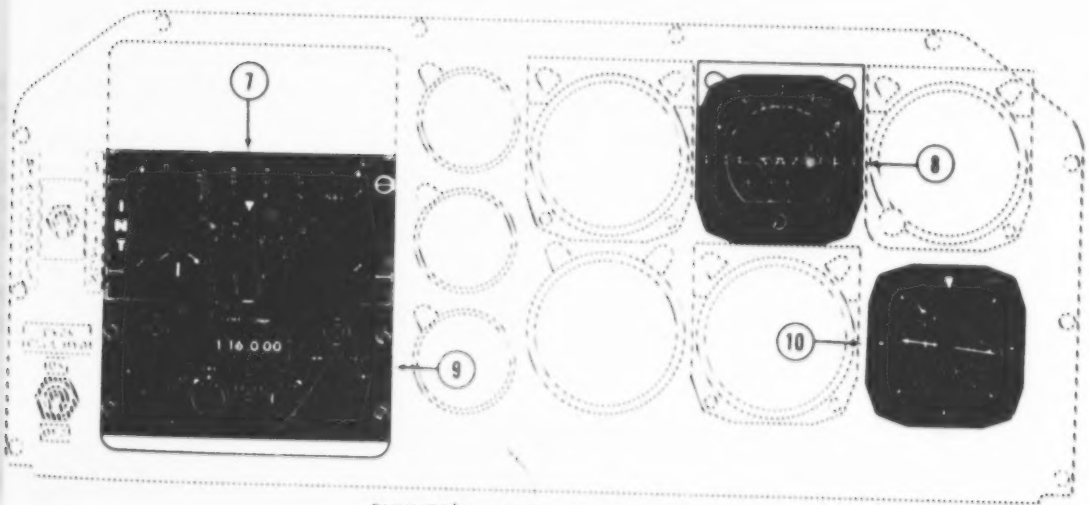
(1) Slide the C–1611(*)/AIC into the bracket assembly until the connector assembly can be mated with the connector at the rear of the C–1611(*)/AIC.

(2) Seat the connector assembly in the connector at the rear of the C–1611(*) AIC, and tighten the spring-lock fasteners to secure the connector assembly.

(3) Position the C–1611(*)/AIC in the bracket assembly, and secure with the spring-lock fasteners.



PILOT'S INSTRUMENT PANEL



GUNNER'S INSTRUMENT PANEL

PILOT'S

1. ATTITUDE INDICATOR
2. RADIO-MAGNETIC IND
3. FM HOMING INDICATOR
4. COMPASS SLAVING SW
5. UHF CONTROL PANEL
6. FM CONTROL PANEL

GUNNER'S

7. ICS CONTROL PANEL
8. ATTITUDE INDICATOR
9. VHF CONTROL PANEL
10. RADIO-MAGNETIC IND

EL 1520-221-20-TM-C2-33

Figure 2–4. Pilot's and gunner's instrument panel (typical).

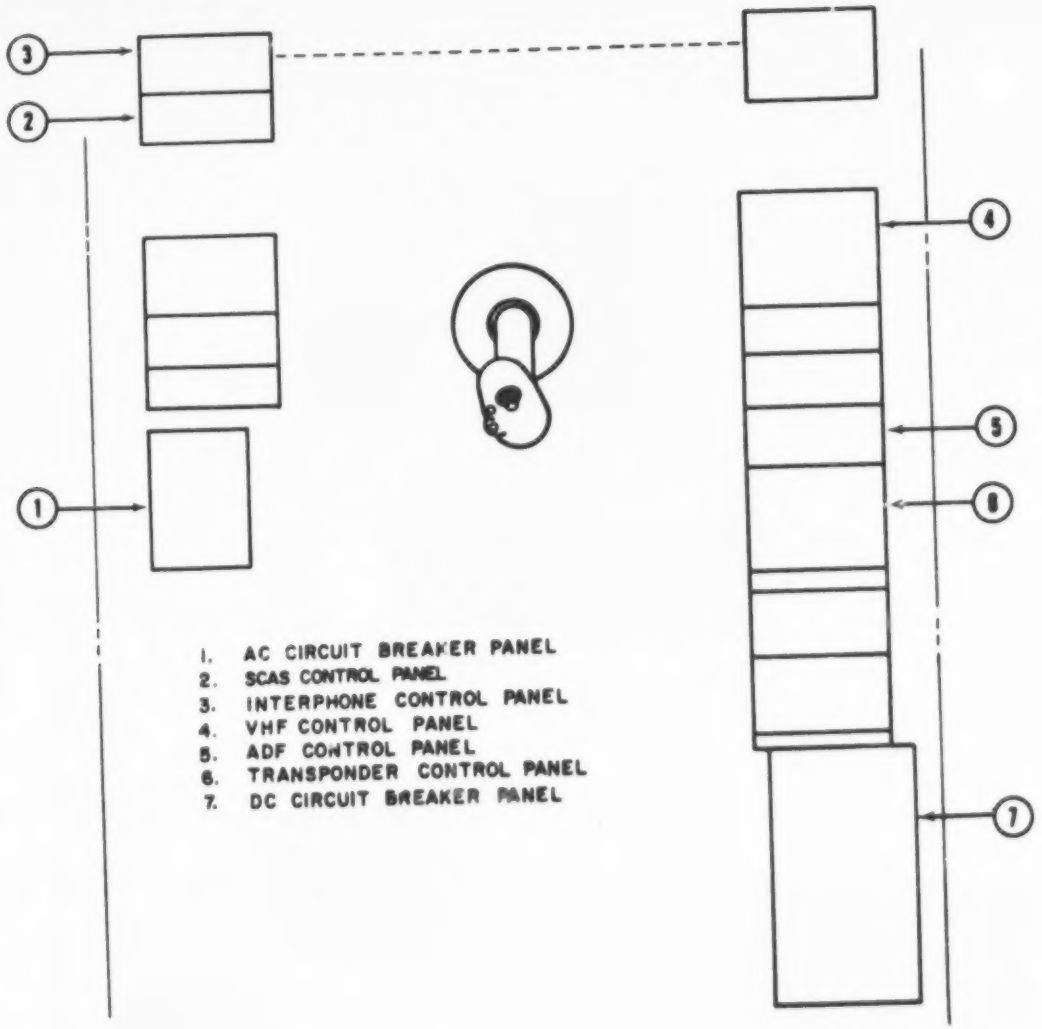


Figure 2-5. Control panel location, (typical).

2-16. Removal and Replacement of Impedance Matching Network P/N 209-075-235 (fig. 1-8)

a. Removal.

(1) Remove screws and washers securing the network assembly to the bracket.

(2) Carefully withdraw and remove the network assembly from the support assembly.

b. Replacement.

(1) Position the impedance matching network, prong end forward, on the bracket. Slide it back until prongs are properly seated in receptacle.

(2) Secure the impedance matching network to the support assembly with screws and washers.

2-17. Removal and Replacement of Discriminator, Discrete Signal MD-736/A (fig. 1-8)

a. Removal.

(1) Disconnect electrical cable from discrimi-

nator. Be sure to tag leads removed from the terminal board.

(2) Remove screws securing discriminator to mount.

(3) Remove discriminator.

b. Replacement.

(1) Position discriminator on mount and secure in place with screws.

(2) Connect electrical cable to discriminator.

2-18. Removal and Replacement of Radio Set AN/ARC-54 or AN/ARC-131

The fm control panel (Control, Radio Set C-3835/ARC-54 or C-7099/ARC-131) is located in the pilot's compartment, and Receiver-Transmitter, Radio RT-348/ARC-54 or RT-823/ARC-131 is installed in the tail boom section. The fm communication antenna (fig. 1-7) is installed inside the pylon fairing.

2-19. Removal and Replacement of Control, Radio Set C-3835/ARC-54 or C-7088/ARC-131

a. Removal.

(1) Loosen the spring-lock fasteners that secure the fm control panel to the bracket assembly.

(2) Lift the panel far enough from the bracket assembly to reach the spring-lock fasteners that secure the connector assembly at the rear of the panel.

(3) Loosen the spring-lock fasteners, and remove the connector assembly from the rear of the panel.

(4) Lift out the fm panel.

b. Replacement.

(1) Slide the fm control panel into the bracket assembly until the connector assembly can be mated with the connector at the rear of the unit.

(2) Seat the connector assembly in the connector at the rear of the fm control panel, and tighten the spring-lock fasteners to secure the connector assembly to the fm control panel.

(3) Push the fm control panel into the bracket assembly, and secure it in place with the spring-lock fasteners.

NOTE

For removal and replacement of Control Indicator C-8157-ARC, refer to steps *a* and *b* above (procedures are the same).

2-20. Removal and Replacement of Receiver-Transmitter, Radio RT-348/ARC-54 or RT-823/ARC-131 (fig. 2-6)

a. Removal.

(1) Release the locking handle catch, located on the front of the receiver-transmitter, by pulling the handle outward and down.

(2) Grasp the locking handle, and pull the receiver-transmitter straight out from its mounting.

b. Replacement.

(1) Position the receiver-transmitter on the mounting, and slide it back until guide pins on the mounting are seated in guide holes on the unit.

(2) Lift locking handle, press inward, and secure with the locking handle catch.

2-21. Removal and Replacement of Mounting MT-1535-ARC-54 (fig. 2-6)

a. Removal.

(1) Remove receiver-transmitter (para 2-20).

(2) Remove eight screws, washers, and nuts securing the MT-1535/ARC-54 to mounting bracket.

(3) Remove the MT-1535/ARC-54.

b. Replacement.

(1) Position the MT-1535/ARC-54 on the mounting bracket.

(2) Secure the mount to mounting bracket with eight screws, washers, and nuts.

(3) Replace receiver-transmitter (para 2-20).

2-22. Removal and Replacement of Antenna, Communications AS-2285/ARC (fig. 1-7)

a. Removal.

(1) Open engine cowling, and remove cover plate directly below fm communication antenna, or open hydraulic reservoir cowling if antenna is installed forward of transmission.

(2) Disconnect the antenna connections from receptacles in the base. Disconnect ground wire from antenna support.

(3) Remove the antenna support and antenna by removing 12 screws securing antenna support to the helicopter.

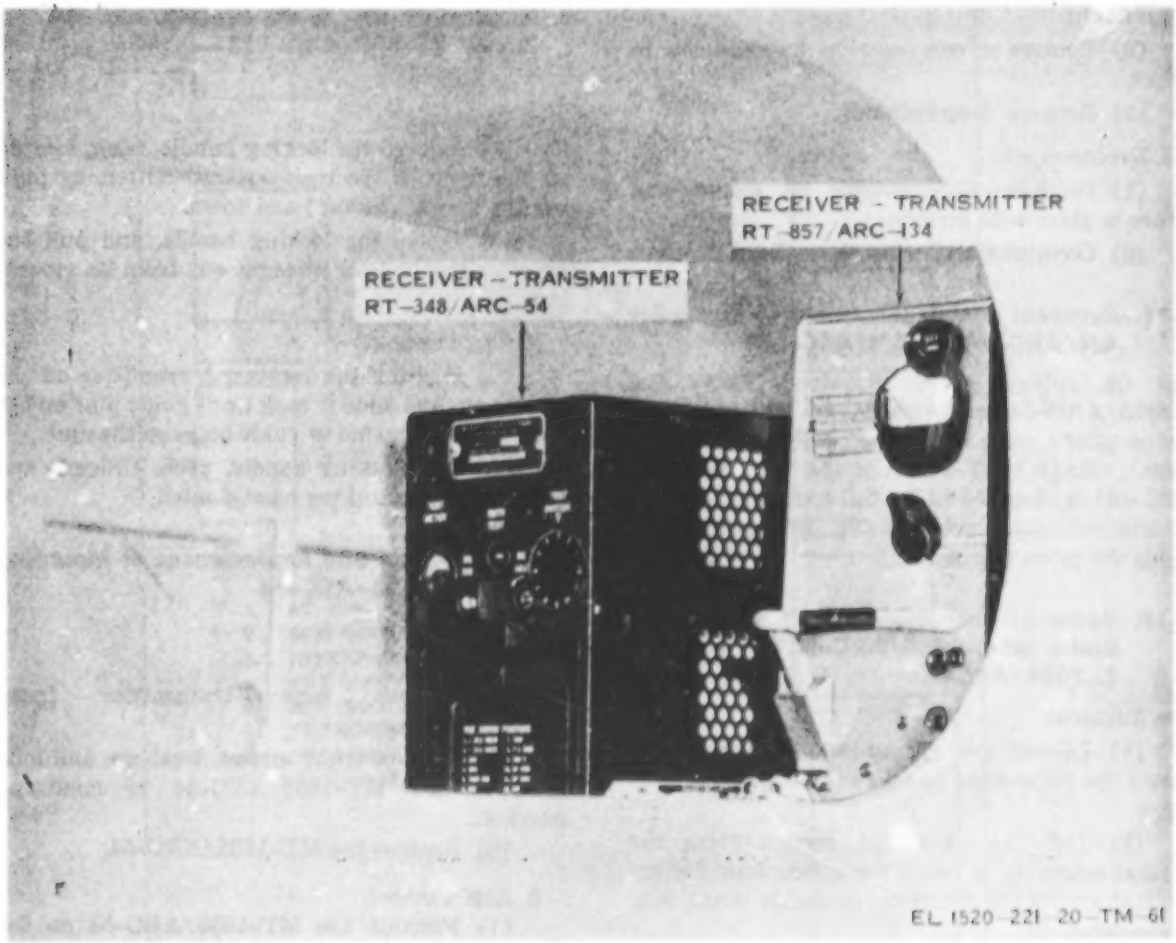


Figure 2-6. Receiver-Transmitter, Radio RT-348/ARC-54.

b. Replacement.

(1) Position antenna support with antenna to helicopter, and secure with 12 screws.

(2) Connect ground wire to antenna support. Connect connectors to receptacles in antenna base.

(3) Secure cover plate directly below antenna. Close engine cowling.

2-23. Removal and Replacement of Homing Antenna
(fig. 2-7)

a. Removal (Lead Foil Type).

(1) Remove two screws (one each side) from short cables between lead foil tape (which functions as antenna) and the transformers.

(2) Pull lead foil tape (homing antenna) from underside of helicopter roof.

b. Replacement.

(1) Place lead foil type (homing antenna) against helicopter roof, conductive side up, and press firmly.

(2) Secure lead foil tape (homing antenna) to short cables with two screws (one each side).

c. Removal (Wire Type Antenna P/N 209-075-292).

(1) Remove two screws (one each side) from short cables.

(2) Carefully cup antenna and slide from left channel mounting.

(3) Slide antenna free from right channel mounting.

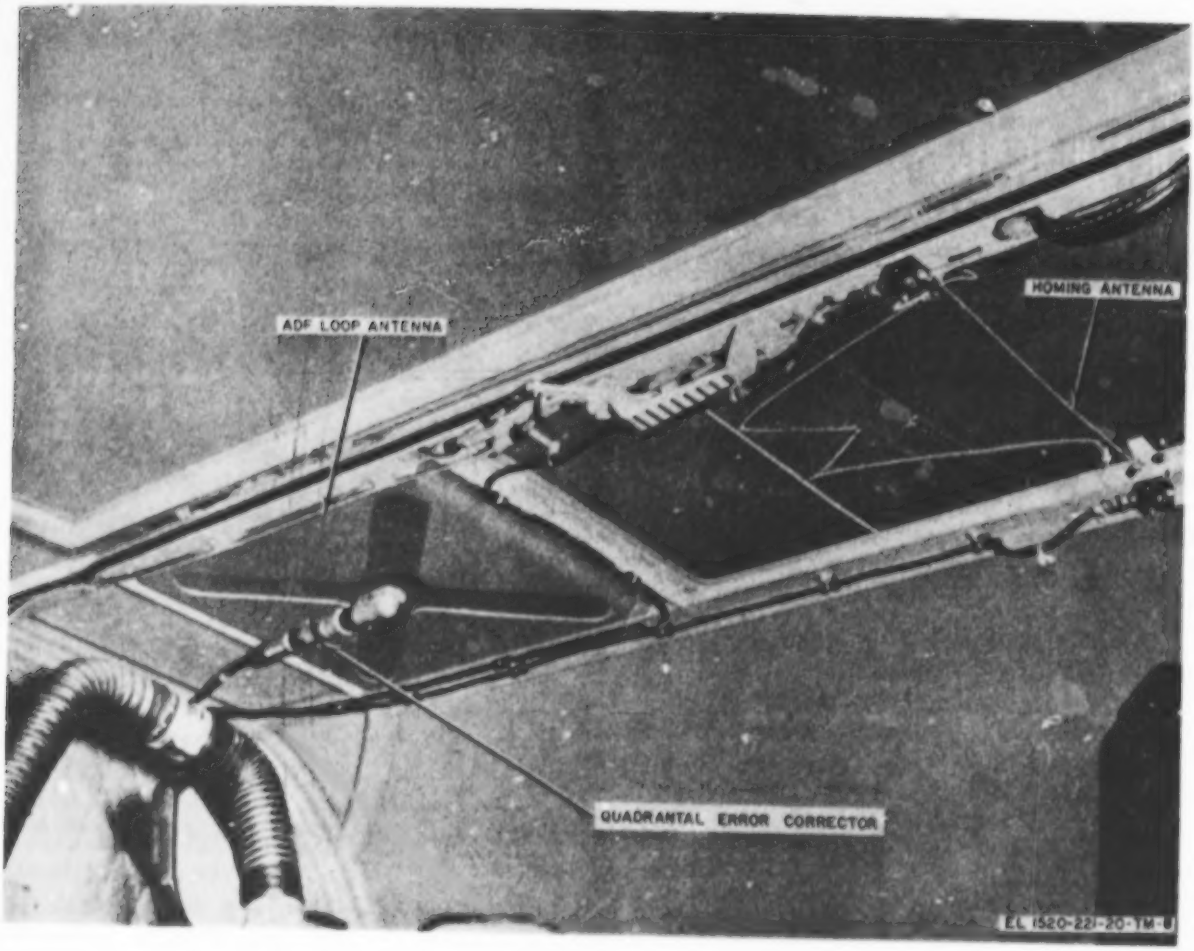


Figure 2-7. Loop and homing antennas.

d. Replacement.

(1) Insert antenna into right channel mounting.

(2) Carefully cup antenna and slide into left channel mounting.

(3) Secure antenna cables in place with one screw on each side.

2-24. Removal and Replacement of Radio Set AN/ARC-51BX

Control, Radio Set C-6287/ARC-51BX (uhf control panel) is located in the pilot's compartment, and Receiver-Transmitter, Radio RT-752(*)/ARC-51BX is installed in the tail boom section. The uhf-vhf antenna (fig. 1-7) is installed inside the pylon fairing or on the tail boom.

2-25. Removal and Replacement of Control, Radio Set C-6287/ARC-51BX (fig. 2-4)

a. Removal.

(1) Loosen the spring-lock fasteners that secure the C-6287/ARC-51BX to the bracket assembly.

(2) Lift the panel far enough from the bracket assembly to reach and disconnect the electrical cable from the back of the control panel.

(3) Lift the control panel free of the mounting.

b. Replacement.

(1) Connect the electrical cable to the rear of the C-6287/ARC-51BX.

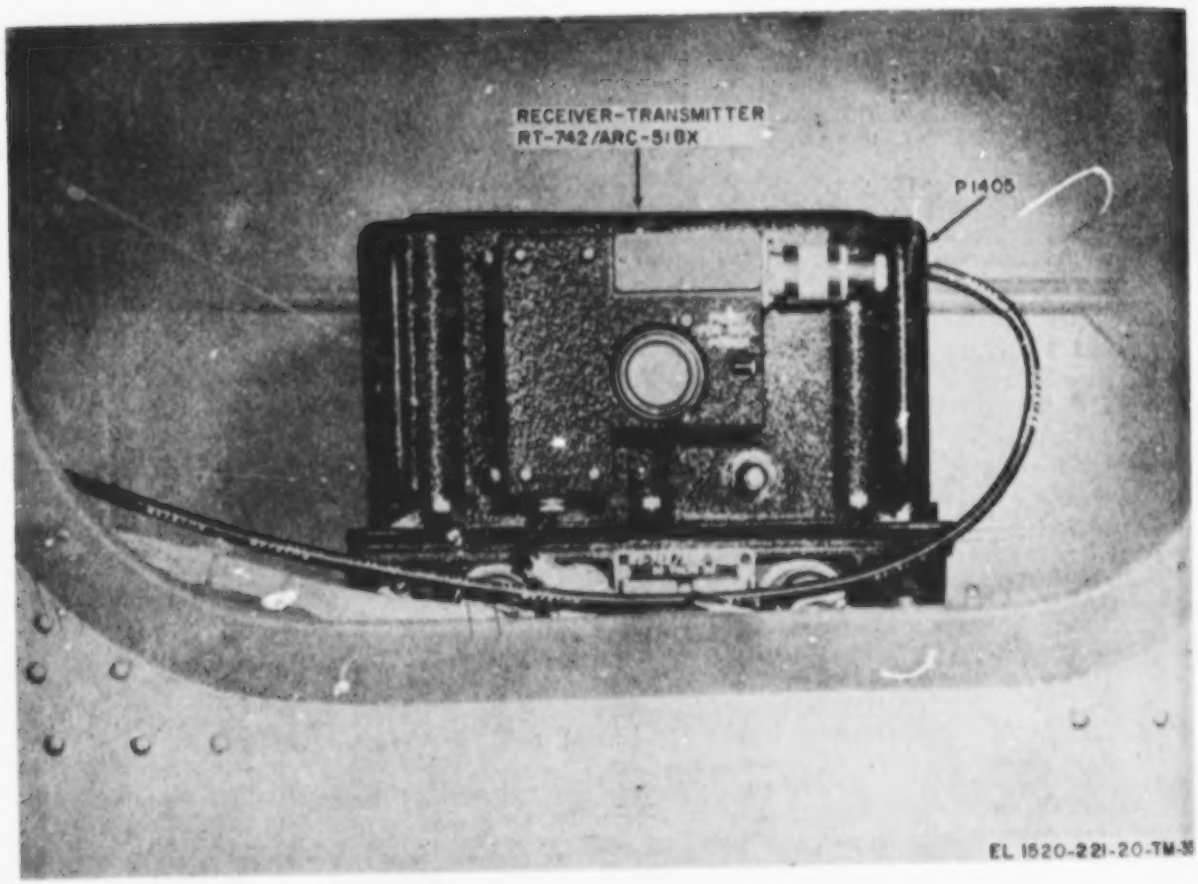


Figure 2-8. Receiver-Transmitter, Radio RT-742(*)/ARC-51BX.

(2) Secure the unit to the mounting with the spring-lock fasteners.

2-26. Removal and Replacement of the Receiver-Transmitter, Radio RT-742(*)/ARC-51BX and Mount MT-2653/ARC
(fig. 2-8)

a. Removal.

(1) Rotate wingnut fasteners counterclockwise until latches release the RT-742/ARC-51BX, and disconnect the electrical cable assembly.

(2) Remove the RT-742(*)/ARC-51BX unit from mount.

(3) Remove Mounting MT-2653/ARC attaching hardware and remove mount.

b. Replacement.

(1) Place mount in position and secure with attaching hardware.

(2) Position the RT-742(*)/ARC-51BX in the mounting bracket, and rotate the wingnut fasteners clockwise until latches latch.

2-27. Removal and Replacement of Antenna AT-1108/ARC
(fig. 1-7)

a. Removal.

(1) Remove the screws that secure the uhf-vhf antenna AT-1108/ARC to the mounting plate on the helicopter.

(2) Open the hydraulic reservoir cowling (configurations A, B, and C) or LH electrical compartment door (configuration D) to obtain access to the antenna cable connections; disconnect antenna cable connections. Lift the AT-1108/ARC from its mounting.

b. Replacement.

(1) Connect the antenna cable connectors

from the helicopter to the AT-1108/ARC receptacles in the antenna base.

(2) Position the AT-1108/ARC on its mounting plate, and secure it with screws.

2-28. Removal and Replacement of Radio Set AN/ARC-134

Control, Radio Set C-7197/ARC-134 (vhf radio control) is located in the gunner's compartment, and Receiver-Transmitter, Radio RT-857/ARC-134 is installed in the tail boom section. The vhf-uhf antenna (fig. 1-7) is installed inside the pylon fairing (configurations A, B, and C) or on the tail boom (configuration D).

2-29. Removal and Replacement of Control, Radio Set C-7197/ARC-134 (fig. 2-4)

a. Removal.

(1) Loosen the spring-lock fasteners that secure the C-7197/ARC-134 to the bracket assembly.

(2) Lift the panel far enough from the bracket assembly to reach and disconnect the electrical cable from the back of the unit.

(3) Lift the C-7197/ARC-134 free of the mounting.

b. Replacement.

(1) Connect the electrical cable to the rear of the C-7197/ARC-134.

(2) Secure the unit to the mounting with the spring-lock fasteners.

2-30. Removal and Replacement of Receiver-Transmitter, Radio RT-857/ARC-134 and Mount MT-3791/ARC-134 (fig. 2-6)

a. Removal.

(1) Loosen the knurled retainer nuts on the front of the mount until the holddown clamps can be slipped off the lugs on the front of the RT-857/ARC-134.

(2) Slide the RT-857/ARC-134 out of its mount.

(3) Remove Mount MT-3791/ARC-134 attaching hardware and remove mount.

b. Replacement.

(1) Place mount in position and secure with attaching hardware.

(2) Place the RT-857/ARC-134 on the mount and push toward the rear until the connector on the rear of the reciver-transmitter is mated with the receptacle in the mount.

(3) Place the holddown clamps of the mount over the lug on the front of the receiver-transmitter.

(4) Tighten the knurled retainer nuts until the RT-857/ARC-134 is secure.

2-31. Removal and Replacement of Direction Finder Set AN/ARN-83

Direction Finder Control C-6899/ARN-83 is mounted on the pilot's right console. The R-1391/ARN-83 is mounted in the aft of fuselage electrical compartment, forward of the tail boom. The loop antenna is installed above the cabin roof (fig. 2-7). The sense antenna P/N 209-030-133 is an integral part of the bottom fuselage skin (fig. 1-7). Indicator, Radio-Magnetic Compass ID-998/ASN is installed in the pilot's instrument panel. Indicator, Course ID-250/ARN is in the gunner's instrument panel.

2-32. Removal and Replacement of Control, Radio Set C-6899/ARN-83 (fig. 2-5)

a. Removal.

(1) Loosen the spring-lock fasteners that secure the C-6899/ARN-83 control unit to the pilot's console.

(2) Lift the control unit from the console.

(3) Disconnect the electrical connectors from the rear of the control unit.

(4) Remove C-6899/ARN-83.

b. Replacement.

(1) Connect the electrical connectors to the rear of the C-6899/ARN-83.

(2) Position the unit in the pilot's console.

(3) Secure the C-6899/ARN-83 unit with the spring-lock fasteners.

2-33. Removal and Replacement of Radio Receiver R-1391/ARN-83 and Mounting MT-3605/ARN-83 (fig. 2-9)

a. Removal.

(1) Disconnect the antenna cable plugs from the receptacles on the receiver front panel.

(2) Loosen the receiver locknut at bottom of receiver.

(3) Lift up the front of the receiver to clear the mounting, and remove R-1391/ARN-83.

(4) Remove Mounting MT-3605/ARN-83 attaching hardware and remove mount.

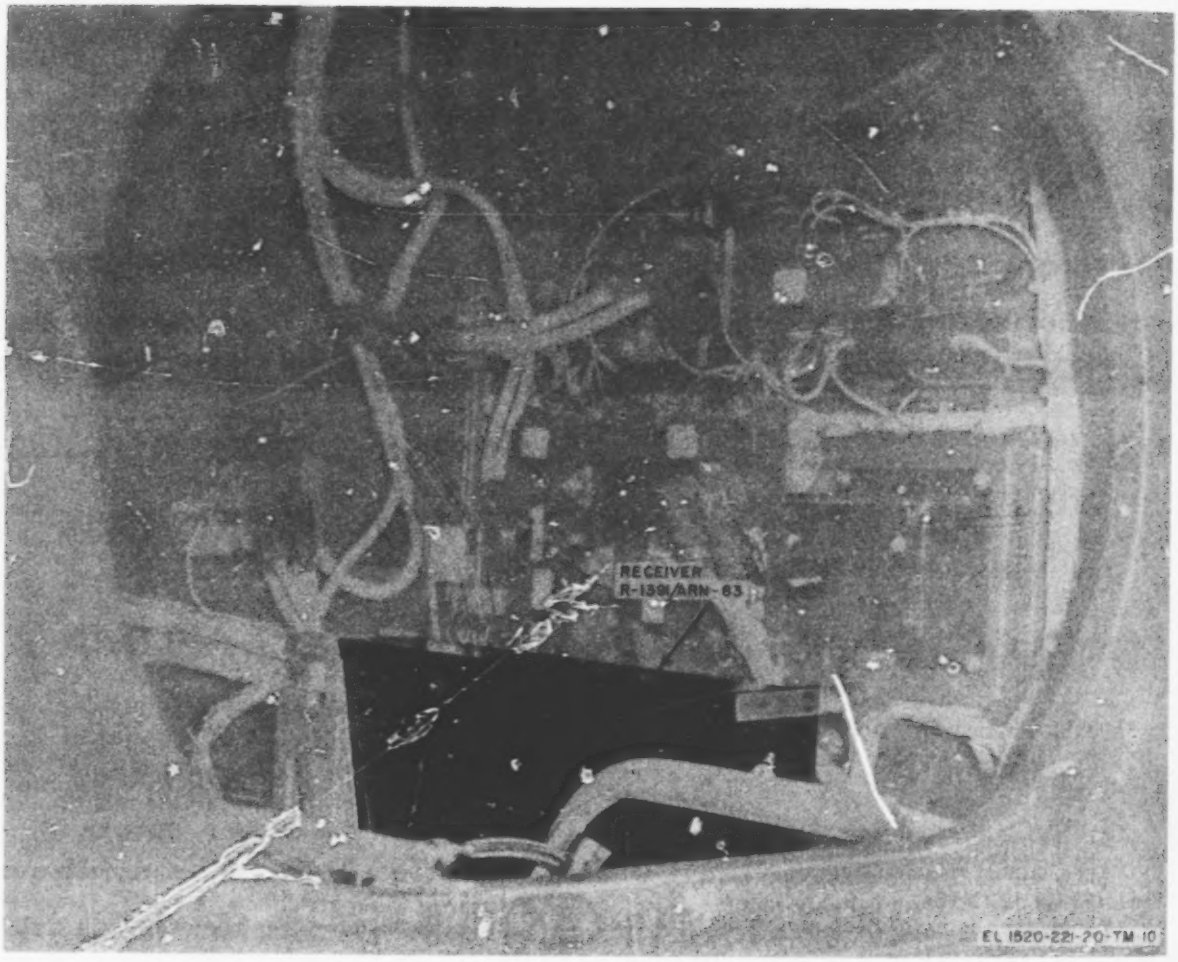


Figure 2-9. Radio Receiver R-1391/ARN-83.

b. Replacement.

(1) Place mount in position and secure with attaching hardware.

(2) Position the R-1391/ARN-83 receiver on its mounting.

(3) Secure the receiver to its mounting with the locknut.

(4) Connect the antenna connectors with their receptacles on the receiver front panel.

2-34. Removal and Replacement of Indicator, Radio-Magnetic Compass ID-998/ASN (fig. 2-4)

a. Removal.

(1) Remove the mounting screws from each corner of the ID-998/ASN indicator.

(2) Slowly pull the indicator out from the instrument panel far enough to reach the electrical connector at the rear.

(3) Disconnect the electrical connector from the indicator and remove the indicator.

b. Replacement.

(1) Connect the electrical connector to the rear of ID-998/ASN indicator.

(2) Position the indicator in the instrument panel, and secure with the screws.

2-35. Removal and Replacement of Indicator, Course ID-250/ARN (fig. 2-4)

a. Removal.

(1) Remove the mounting screws from each corner of the ID-250/ARN indicator.

(2) Slowly pull the indicator out from the instrument panel far enough to reach the electrical connector at the rear.

(3) Disconnect the electrical connector from the indicator and remove the indicator.

b. Replacement.

(1) Connect the electrical connector to the rear of the ID–250/ARN indicator.

(2) Position the indicator in the instrument panel, and secure with the screws.

2–36. Removal and Replacement of Loop Antenna Type 137A–7 and Quadrantal Error Corrector (777–1579–001)

(fig. 2–7)

a. Removal.

(1) Disconnect antenna plug from corrector.

(2) Disconnect corrector from loop antenna.

(3) Remove screws securing antenna to roof.

(4) Remove loop antenna.

b. Replacement.

(1) Secure loop antenna to roof with mounting screws.

(2) Connect corrector to loop antenna.

(3) Connect antenna plug to corrector.

2–37. Removal and Replacement of Sense Antenna P/N 209–030–133

(fig. 1–7)

a. Removal.

(1) Remove screws securing sense antenna to bottom of helicopter.

(2) Lower antenna, and disconnect antenna plug from antenna.

(3) Remove antenna.

b. Replacement.

(1) Connect antenna plug to sense antenna.

(2) Secure antenna to bottom of helicopter with mounting screws.

2–38. Removal and Replacement of Gyromagnetic Compass Set AN/ASN–43

Transmitter, Induction Compass T–611/ASN and Compensator, Magnetic Flux CN–405/ASN are installed in the tail boom. Directional Gyro CN–998/ASN–43 and Amplifier, Electronic Control AM–3209/ASN are located in the aft fuselage electrical compartment.

2–39. Removal and Replacement of Directional Gyroscope CN–998/ASN–43

(fig. 2–10)

a. Removal.

(1) Disconnect the electrical connector from the CN–998/ASN–43 gyro control.

(2) Four Phillips-head screws hold the CN–998/ASN–43 to the electrical compartment shelf. Loosen the rear two and remove the front two.

(3) Remove the CN–998/ASN–43 control from the electrical compartment shelf.

b. Replacement.

(1) Position the CN–998/ASN–43 gyro control on the aft electrical compartment shelf, with the arrow on the gyro control pointing toward the front of the helicopter.

(2) Secure the CN–998/ASN–43 gyro control to the aft electrical compartment shelf with the mounting screws.

(3) Connect the electrical connector.

2–40. Removal and Replacement of Transmitter, Induction Compass T–611/ASN

(fig. 2–11)

a. Removal.

(1) Remove the screws that secure the T–611/ASN to its mounting bracket.

(2) Remove the compass transmitter and CN–405/ASN as a unit.

(3) Remove wiring to the compass transmitter.

b. Replacement.

(1) Connect the electrical wiring to the T–611/ASN compass transmitter.

(2) Place the compass transmitter and CN–405/ASN error compensator as a unit into the mounting bracket.

NOTE

Check to see that the mounting flange graduations on the remote compass transmitter are facing the forward portion of the helicopter.

(3) Secure the compass transmitter to its mounting bracket with the mounting screws.

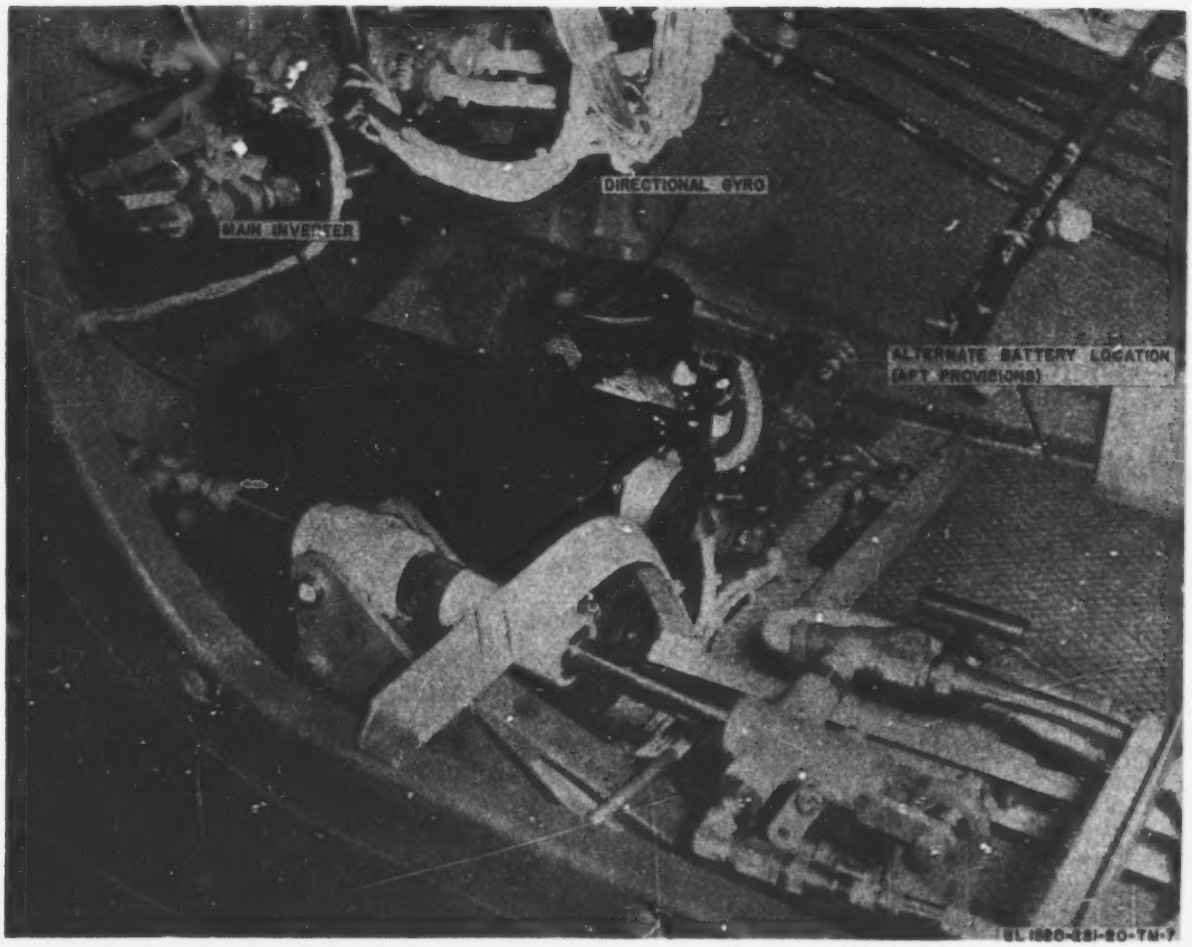


Figure 2-10. Main inverter, directional gyro, battery location (aft provisions).

2-41. Removal and Replacement of Gyroscope Vertical Displacement CN-1314/A
(fig. 2-12)

a. Removal.

(1) Disconnect electrical cable from gyro.

(2) Remove screws securing gyro to bracket.

(3) Carefully remove gyro.

b. Replacement.

(1) Carefully position gyro in place on bracket.

(2) Secure gyro to bracket with screws.

(3) Connect electrical cable to gyro.

2-42. Removal and Replacement of Rate Switch Gyro
(fig. 2-12)

a. Removal.

(1) Disconnect electrical cable from rate switch gyro.

(2) Remove nuts, washers, and screws securing rate switch gyro to structure.

(3) Remove rate switch gyro.

b. Replacement.

(1) Position rate switch gyro on structure and secure in place with screws, washers, and nuts.

(2) Connect electrical cable to rate switch gyro.

2-42.1. Removal and Replacement of Amplifier, Electronic Control AM-3209/ASN

Depending on the configuration, the AM-3209/ASN can be located in one of two positions. If the AM-3209 is not located in the pilot's compartment adjacent to the left rudder pedal, it will be found secured to a bracket on the backside of the ammunition compartment rear wall. Proceed with instructions provided in *a* and *b* below (pilot compartment location) or *c* and *d* below (attached to rear wall) for removal and replacement of the AM-3209/ASN.

a. Pilot Compartment Location Removal.

(1) In the pilot's compartment, loosen the screws that hold the panel around the AM-3209/ASN.

(2) Remove the panel to expose the screws that secure the metal band around the AM-3209/ASN.

(3) Loosen the screws to loosen the band.

(4) Remove the plug from the bottom of the AM-3209/ASN. Lift out the AM-3209/ASN.

b. Pilot Compartment Location Replacement.

(1) Lower the AM-3209/ASN in the lower left front of the pilot's compartment. Slip metal band around unit and connect the plug.

(2) Tighten the band securing the AM-3209/ASN.

(3) Replace the side panel and secure in position.

c. Rear Wall Removal.

(1) Remove the screws securing the AM-3209/ASN to the mounting bracket.

(2) Disconnect the cable from the unit and lift out the AM-3209/ASN.

d. Rear Wall Replacement.

(1) Position the AM-3209/ASN in the mounting bracket, attached to the backside of the ammunition compartment rear wall, so that the connector is within easy access of the attaching cable.

(2) Secure the AM-3209/ASN to the mounting bracket using the screws removed in *c* above.

(3) Attach the cable to the AM-3209/ASN connector.

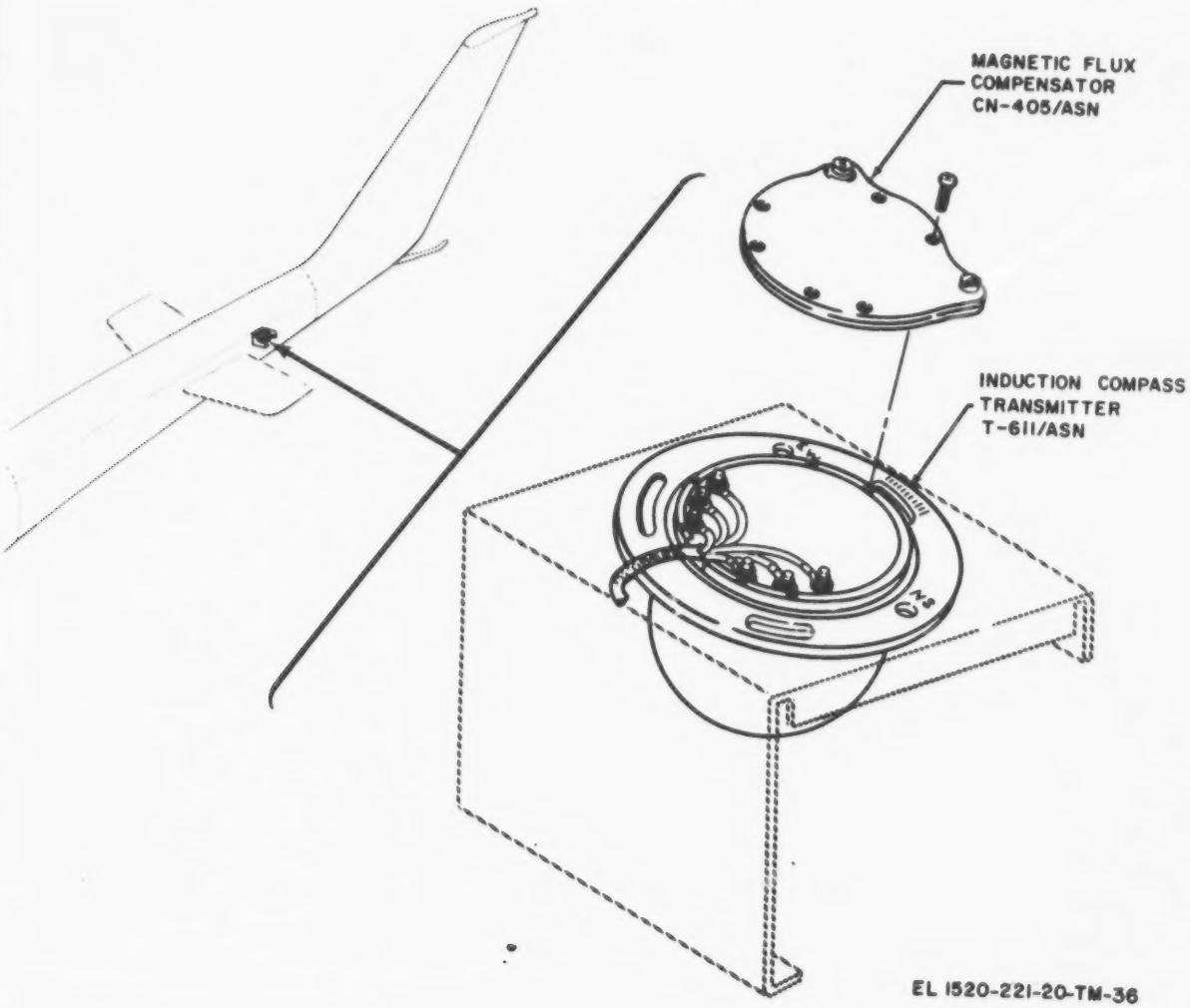


Figure 2-11. Transmitter, Induction Compass T-611/ASN.

2-43. Removal and Replacement of Transponder Set AN/APX-44

Receiver-Transmitter, Radar RT-494/APX-44 and Mounting MT-2100/APX-44 are located in the aft section. Control, Transponder Set C-2714/APX-44 is in the pilot's compartment. Antenna AT-884/APX-44 is located on the underside of the helicopter directly under the pilot's compartment (fig. 1-7).

2-44. Removal and Replacement of Receiver-Transmitter, Radar RT-494/APX-44 and Mounting MT-2100/APX-44 (fig. 2-13)

a. Removal.

(1) Disconnect all cables from the front panel connectors.

(2) Loosen the two knurled knobs of hold-down clamps on the mount by turning counter-clockwise.

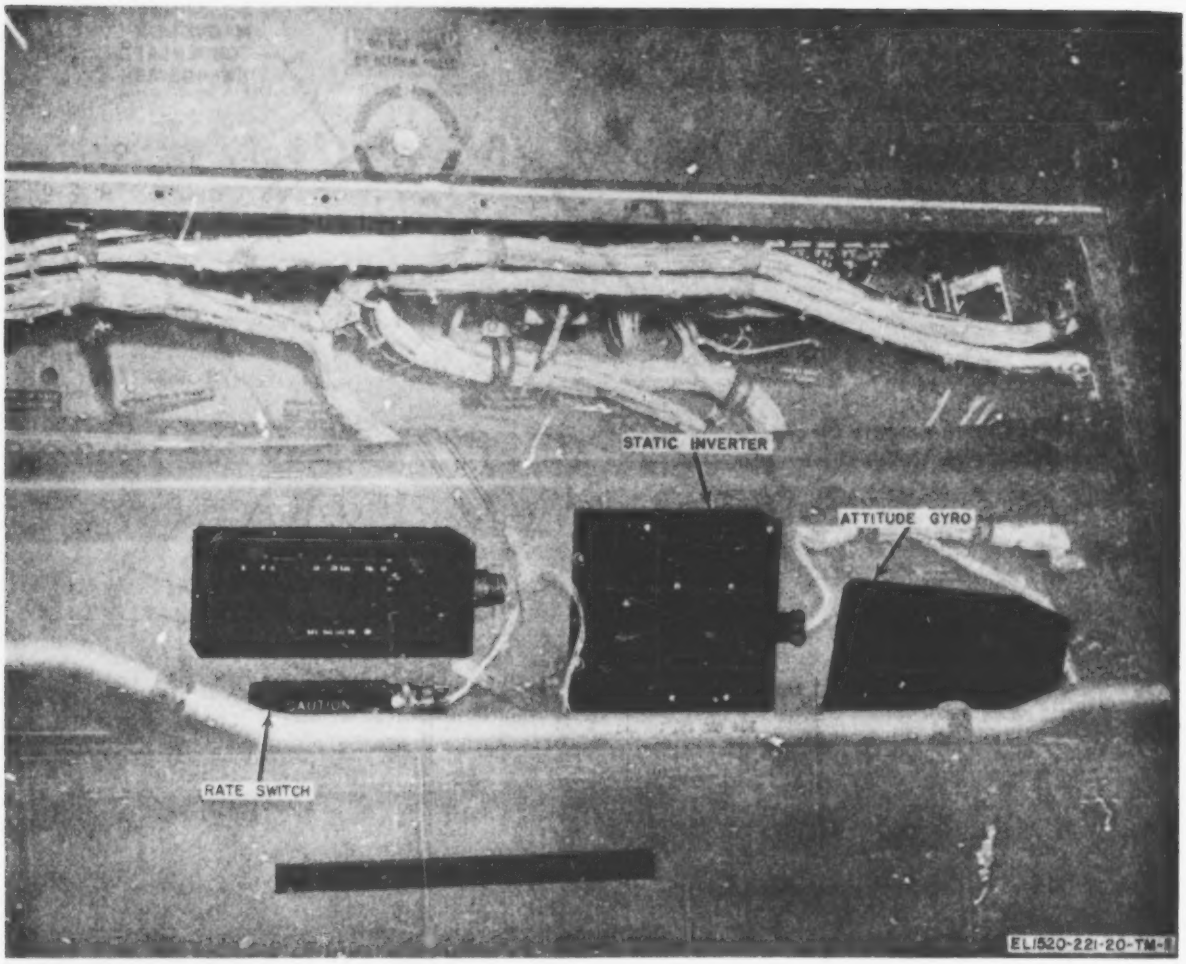


Figure 2-12. Rate switch, gyro, CN-1314/A, and standby inverter.

(3) Turn the injector-ejector knob counterclockwise several turns. When the RT-494/APX-44 has been brought out far enough to disengage the holddown hooks, lift the front end slightly to clear the front panel lip from the injector-ejector groove. Withdraw the receiver-transmitter from the mount.

(4) Remove Mounting MT-2100/APX-44 attaching hardware and remove mount.

b. Replacement.

(1) Place mount in position and secure with attaching hardware.

(2) Place the RT-494/APX-44 between the side rails of the mount.

(3) Slide the RT-494/APX-44 to the rear until the guide pins at the rear of the mount engage the guide holes at the rear of the case.

(4) Before the mount and the receiver-transmitter connectors engage, raise the RT-494/APX-44 slightly and match the lip of its case with the groove of the injector-ejector mechanism.

(5) Lower the case front, with the lip and groove engaged. Turn the injector-ejector knob clockwise until the receiver-transmitter is fully seated.

(6) Lock the RT-494/APX-44 in place by engaging and tightening the holddown clamps and turning the knurled knobs clockwise.

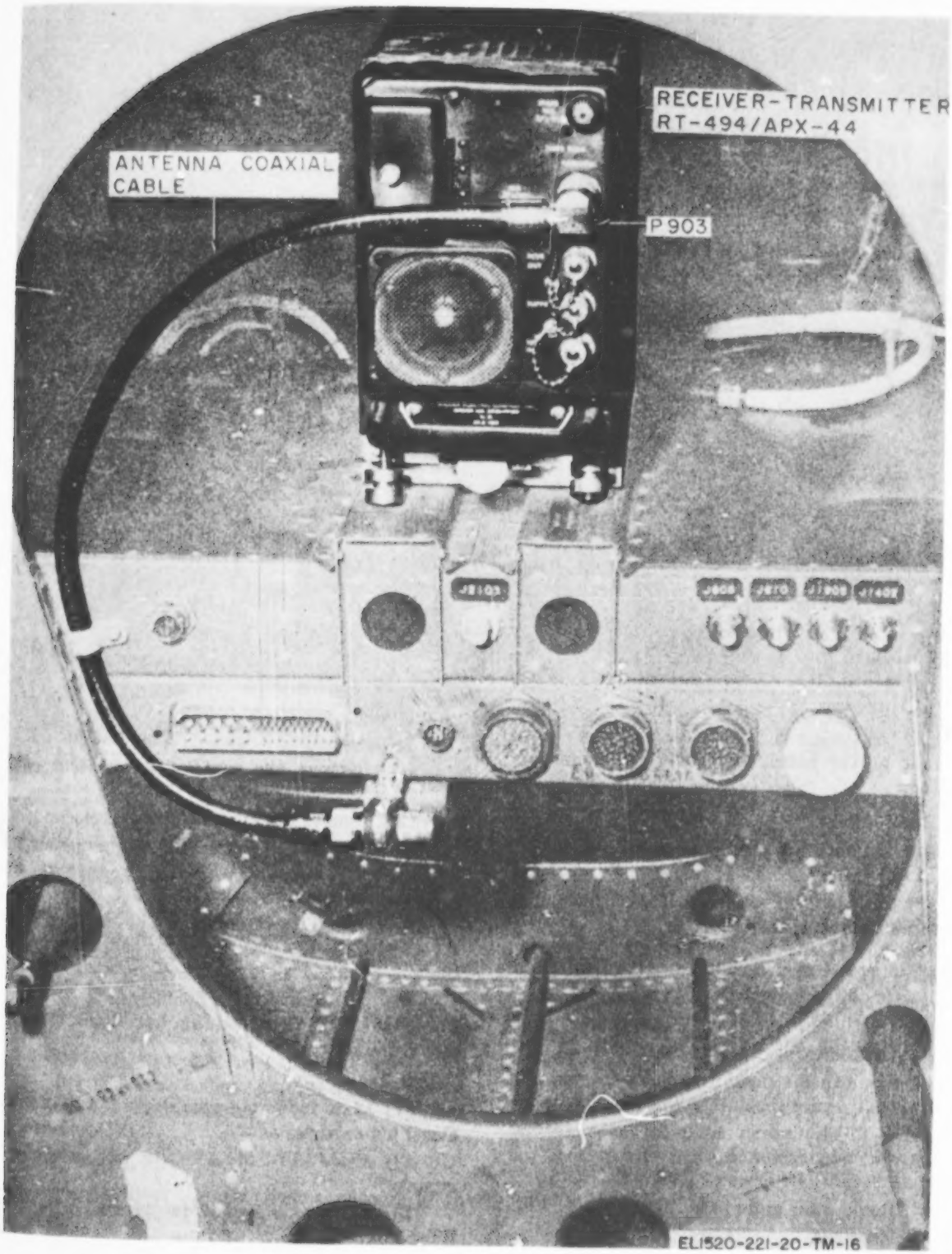


Figure 2-13. Transponder Set R-494/APX-44.

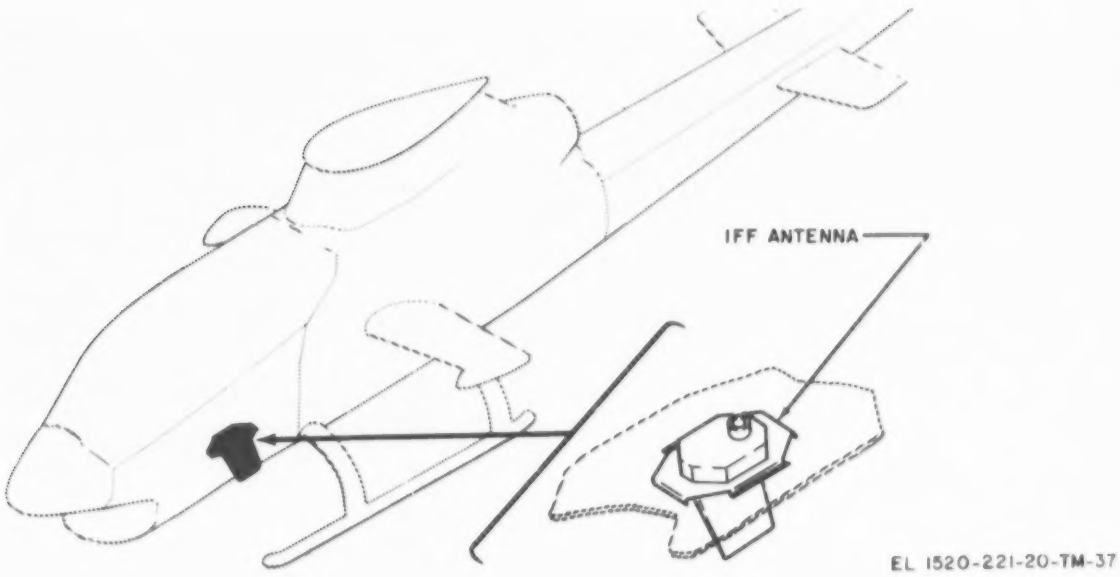


Figure 2-14. Antenna AT-884/APX-44.

2-45. Removal and Replacement of Control, Transponder Set, C-2714/APX-44 (fig. 2-4)

a. Removal.

(1) Release the mounting fasteners, and lift the C-2714/APX-44 from the console.

(2) Disconnect the electrical connector from the rear of the panel, and cover the connector openings.

b. Replacement.

(1) Connect the electrical connector to the rear of the C-2711/APX-44 panel.

(2) Position the panel in the console and secure the mounting fasteners.

2-46. Removal and Replacement of Antenna AT-884/APX-44 (fig. 2-14)

a. Removal.

(1) Remove the mounting screws, nuts, and washers that secure the antenna to the helicopter.

(2) Pull the antenna out as far as the wiring will permit, and disconnect the wires from the antenna.

(3) Remove the antenna.

b. Replacement.

(1) Connect the wires to the antenna.

(2) Position the antenna, and install the mounting screws, nuts, and washers.

2-47. Removal and Replacement of RT-859/APX-72 Transponder and Mount (fig. 2-15)

a. Removal.

(1) Remove the power and control cable connector.

(2) Remove the antenna cable connector.

(3) Disengage the two screw clamps on the front of the RT-859/APX-72 by turning the knurled nuts counterclockwise.

(4) Using the handle on the front of the RT-859/APX-72, pull forward and away from the MT-3809/APX-72 or MT-3948/APX-72.

(5) Remove MT-3809/APX-72 or MT-3948/APX-72 attaching hardware and remove mount.

b. Replacement.

(1) Place mount in position and secure with attaching hardware.

(2) Place RT-859/APX-72 in position on mount.

(3) Engage the two screw clamps on front of RT-859/APX-72 by turning the knurled nuts clockwise.

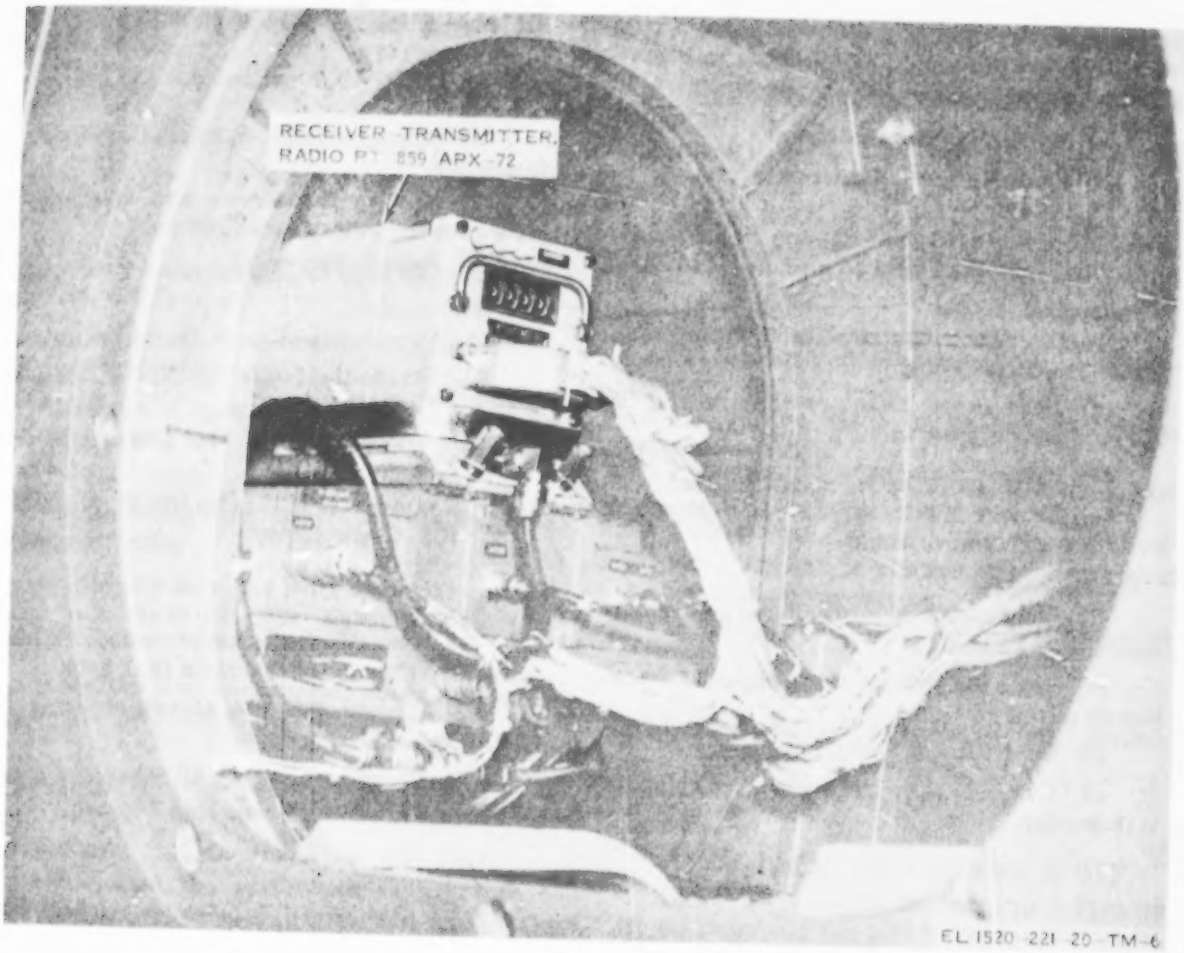


Figure 2-15. Receiver-Transmitter, Radar RT-859/APX-72.

(4) Reconnect the antenna cable connector.
(5) Reconnect the power and control cable.

2-48. Removal and Replacement of Control, Transponder Set C-6280A(P)/APX
(fig. 1-6)

a. Removal.

(1) Release the spring lock fasteners, and lift the C-6280A(P)/APX from the console.

(2) Disconnect the electrical connector from the rear of the panel, and cover the connector openings.

b. Replacement.

(1) Connect the electrical connector to the rear of the C-6280A(P)/APX.

(2) Position the panel in the console and secure the mounting fasteners.

2-49. Removal and Replacement of Communications Security Equipment TSEC/KY-28
(fig. 1-3)

The TSEC/KY-28 is classified and is installed and maintained by authorized personnel only.

2-50. Removal and Replacement of Test Set, Transponder TS-1843/APX and Mount MT-3513/APX

a. Removal.

(1) Disconnect electrical cable from test set.

(2) Remove screws securing test set to mount.

(3) Remove test set.

(4) Remove Mount MT-3513/APX attaching hardware and remove mount.

b. Replacement.

(1) Place mount in position and secure with attaching hardware.

(2) Position test set in place on mount.

(3) Secure in place with screws.

(4) Connect electrical cable to test set.

2-51. Removal and Replacement of Computer KIT-1A/TSEC and Mount MT-3949A/U

a. Removal.

(1) Disconnect electrical cable from transponder computer.

(2) Release the fasteners that secure the transponder computer to the mount.

(3) Remove the transponder computer.

(4) Remove Mount MT-3949A/U attaching hardware and remove mount.

b. Replacement.

(1) Place mount in position and secure with attaching hardware.

(2) Place the transponder computer in position on mount.

(3) Secure in place with fasteners.

(4) Connect electrical cable to computer transponder.

2-52. Removal and Replacement of Microphone Switch SA-47A/AIC (fig. 1-1)

a. Removal.

(1) Disconnect and tag wires attached to the footswitch.

(2) Remove the screws and washers that secure the footswitch to cabin floor.

(3) Remove footswitch.

b. Replacement.

(1) Connect the wires to the footswitch.

(2) Secure the footswitch to the cabin floor with screws and washers.

(3) Attach wires to footswitch.

2-53. Removal and Replacement of RADIO-ICS Cyclic Switch (fig. 2-16)

a. Removal.

(1) Remove the plastic cover (left-hand threads) at the top of the cyclic stick grip.

(2) Remove the two screws securing RADIO-ICS switch in grip.

(3) Disconnect and tag all wires, and remove the RADIO-ICS switch.

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Figure 2-16. Cyclic stick grip.

b. Replacement.

(1) Connect the tagged wires to the RADIO-ICS switch.

(2) Slide the switch into the cyclic stick grip.

(3) Secure switch with two screws.

(4) Restore the plastic cover (left-hand threads).

2-54. Parts Replacement of Control Unit Panel Lamps

To replace panel lamps installed on the control units, proceed as follows:

a. Remove the lamp housing from the control unit by grasping it firmly and turning it counterclockwise.

b. Pull the lamp bulb forward and out from the housing mounting.

c. Replace the defective lamp bulb with a newly tested unit. Make sure that flange on the lamp bulb is flush with the housing mounting.

d. Insert the lamp housing into the control panel and turn it clockwise until it is secure.

2-55. Removal and Replacement of SAS Control Panel and Sensor Amplifier Unit

a. Removal, SAS Control Panel (fig. 2-5).

(1) Loosen the spring-lock fasteners that secure the control panel to the pilot's console.

(2) Lift the control panel from console.

(3) Disconnect the electrical connectors from the rear of the control panel.

(4) Remove control panel.

b. Replacement, SAS Control Panel.

(1) Connect the electrical connectors to the rear of the control panel.

(2) Position control panel in the console.

(3) Secure control panel with the spring-lock fasteners.

c. Removal of Sensor Amplifier Unit (fig. 2-17).

(1) Loosen and disengage amplifier connector.

(2) Remove mounting screws from sensor amplifer unit.

(3) Cautiously lift sensor amplifier unit from mounting shelf.

d. Replacement Sensor Amplifier Unit.

(1) Cautiously set sensor amplifier unit on mounting shelf.

(2) Secure sensor amplifier unit with mounting screws.

(3) Connect sensor amplifier unit connector.

2-56. Removal and Replacement of Pylon Compensation Unit (fig. 2-17)

a. Removal.

(1) Loosen and disengage pylon compensation connector.

(2) Remove mounting screws from pylon compensation unit.

(3) Cautiously lift unit from mounting shelf.

b. Replacement.

(1) Place unit in position on mounting shelf and install mounting screws.

(2) Engage and secure electrical connector.

2-57. Removal and Replacement of Main Inverter PU-543(*)/A (fig. 2-10)

a. Removal.

(1) Be sure all electrical power is OFF.

(2) Remove connector from main inverter. Protect receptacle and plug with caps or electrical tape.

(3) Remove mounting bolts and lift main inverter from compartment.

b. Replacement.

(1) Position main inverter in compartment and install mounting bolts.

(2) Remove caps or electrical tape from connector, engage connector and secure.

2-58. Removal and Replacement of Inverter, Power, Static PP-6508/U (fig. 2-12)

a. Removal.

(1) Be sure all electrical power is OFF.

(2) Remove connector from the standby inverter. Protect receptacle and plug with caps or electrical tape.

(3) Remove mounting bolts and lift standby inverter from compartment.

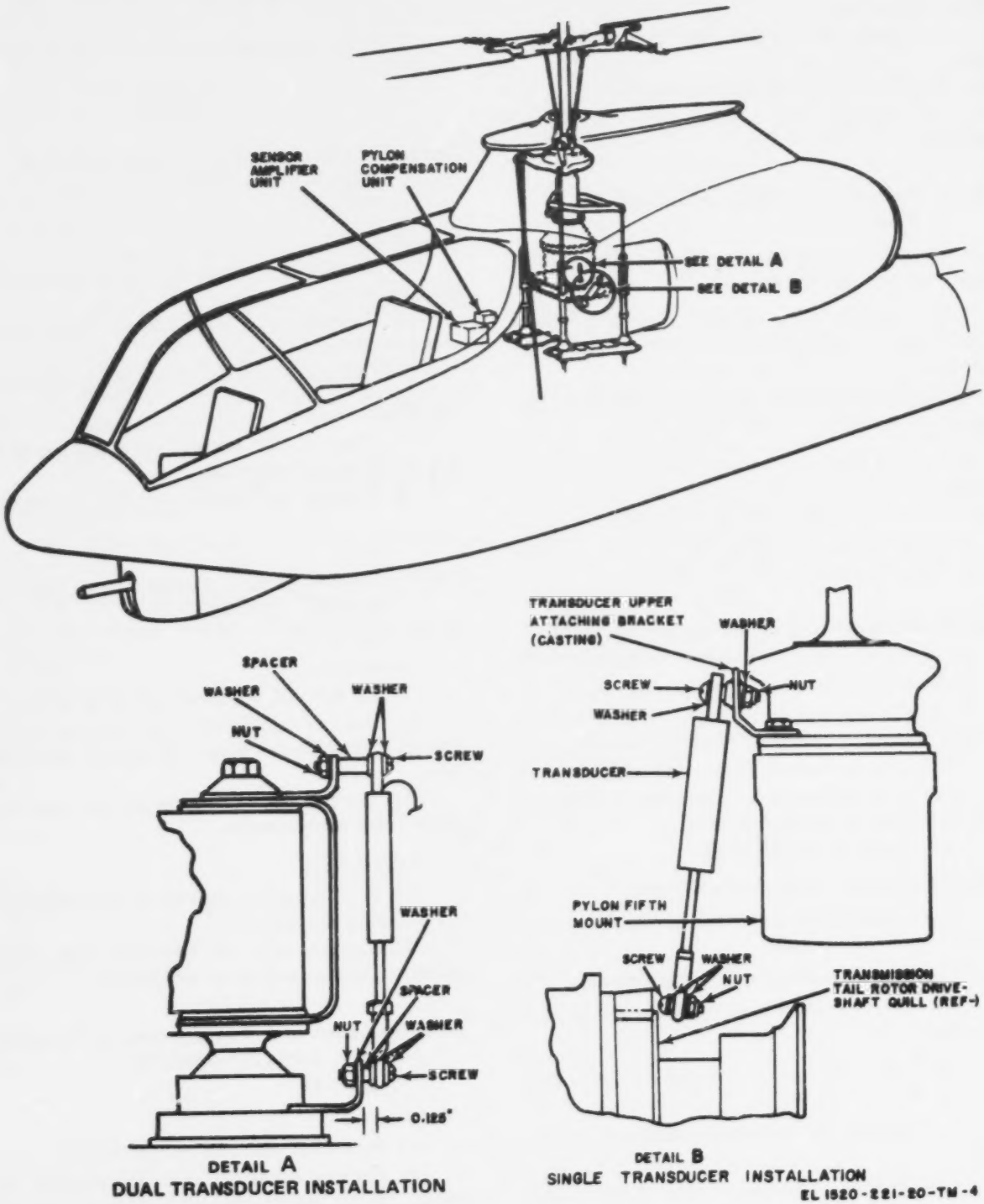

Figure 2-17. Stability and control augmentation system.

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b. Replacement.

(1) Position the standby inverter in compartment and install mounting bolts.

(2) Remove caps or electrical tape from connectors, engage connector and secure.

2-58.1. Removal and Replacement of Main Inverter PP-7274(*)/A

The PP-7274(*)/A is mounted inverted (fig. 1-3.1) to the ceiling of the electrical compartment (fig. 1-9).

WARNING

Be extremely careful when loosening the screws to remove the PP-7274(*)/A from the ceiling location. If possible, have one person hold the PP-7274(*)/A while a second person does the hex-nut removal.

a. Removal

(1) Open the electrical compartment door located on the right side of the helicopter, the second panel below the engine exhaust pipe.

(2) Remove the four hex-nuts, lockwashers, and flat washers holding the inverter mounting plate to the ceiling of the electrical compartment.

(3) Remove the inverter and mounting plate from the electrical compartment.

(4) Remove the four hex-nuts, lockwashers, and flat washers from the bolts securing the inverter to the mounting plate.

b. Replacement.

(1) Secure the replacement PP-7274(*)/A to the mounting plate using the hardware removed in *a*(4) above.

(2) Position the mounting plate over the four bolts protruding from the electrical compartment ceiling over the battery.

(3) Secure the mounting plate to the ceiling using the hardware removed in *a*(2) above.

(4) Close the electrical compartment door.

2-59. Removal and Replacement of Battery (fig. 2-3)

Removal and replacement of the forward or aft battery will be performed in accordance with instructions provided in TM 55-1520-221/234-23.

2-59.1. Removal and Replacement of PWD Antenna

a. Removal of Upper PWD Antenna.

(1) Open the door on the center transmission fairing.

(2) Disconnect the antenna cable connector from the base of the Upper PWD antenna.

(3) On top of the transmission nose fairing, remove screws which secure the antenna to the aircraft.

(4) Reinstall screws in the wedge spacer and seal a button plug in the hole in the wedger spacer.

b. Replacement of Upper PWD ANtenna.

(1) Remove screws from wedge spacer on top of the transmission nose fairing of the aircraft and save screws, washers, and nuts for reuse.

(2) Position the antenna on top of the wedge spacer and align holes.

(3) Insert screws, saved in step 1, in the holes of the antenna.

(4) Under fairing install the washers and secure the nuts previously removed.

(5) Connect the antenna cable to the PWD antenna connector and close fairing access door.

(6) Apply a small bead of RTV sealant between the antenna and wedge spacer.

c. Removal of Lower PWD Antenna.

(1) Underneath the aircraft, remove the center belly access cover, P/N 209-030-257-3.

(2) Reach inside the access door and disconnect the antenna cable connector for the Lower PWD antenna.

(3) Remove the four screws which secure the Lower PWD antenna, wedge spacer and washer and nuts.

(4) Reinstall the four screws in the wedge spacer and seal a button plug with RTV sealant in the hole in the wedge spacer.

d. Replacement of Lower PWD Antenna.

(1) Underneath the aircraft, remove the center belly access cover, P/N 209-030-257-3.

(2) Remove screws from wedge spacer and save for reuse.

(3) Position the antenna on wedge spacer and align screw holes.

(4) Insert screws, saved in step 2, in antenna and secure antenna to the access cover.

(5) Connect the antenna cable to the Lower PWD antenna connector.

(6) Reinstall the access cover.

(7) Apply a small bed of RTV sealant between the antenna and wedge spacer.

2-59.2 Removal and Replacement of PWD Receiver-Transponder.

a. Removal of PWD Receiver-Transponder YG1054.

(1) The receiver-transponder YG1054 is secured to the radio control console with four Dzus type, quarter turn fasteners (one fastener at each corner of the panel). Loosen the four fasteners and lift the unit clear of the console.

(2) Remove the antenna cables, power cable and static air line at the rear of the unit.

NOTE

When the Proximity Warning Facility YG-1054 is permanently removed from the aircraft, the static air line which was fastened to the PWD unit must be plugged and tested prior to flight.

b. Replacement of PWD Receiver-Transponder YG-1054.

(1) Reconnect the power cable, antenna cables and static air line at the rear of the receiver-transponder

(2) Mount the receiver-transponder on the radio control console and tighten the four quarter turn fasteners.

2-60. Safety Wiring

To prevent loosening during service, all attaching hardware and electrical connectors for the components of the electronic configuration must be secured with safety wire. Tighten the applicable mounting hardware and install safety wire, arranged so that loosening of the hardware will cause the safety wire to tighten. Use new safety wire and be careful not to kink the wire.

2-61. Wiring Repairs

a. General. When removal and replacement of major components have not corrected a trouble within a facility of the electronic equipment configuration, troubles in the electronic equipment configuration wiring may be the cause. Refer to the electronic configuration facility schematic diagrams for interunit wiring details. For general instructions in repairing the helicopter electronic configuration, refer to TM 11-530 and TM 55-405-3.

b. Wire Identification Code. The wires of the electronic configuration are identified by wire numbers; for example, RZ 130A20N. The first two symbols are code letters (RZ in the above example) which identify the facility in accordance with the chart below. The second symbol (130) is the cable number; it differentiates between cables in a particular facility. The third symbol (A) identifies the cable segment, the cable run between terminals or connections. The next symbol (20) indicates the wire size. The last symbol (N) commonly called the ground letter, identifies cable which completes a circuit to ground.

Code letters	*Functions*
RZ	Interphone
RF	Fm liaison
RU	Uhf command
RV	Vhf set
SX	Iff transponder
RN	Radio navigation
TN	Course indicators

c. Connector Replacement. The chart below lists all the electronic configuration wiring connectors that can be replaced at organizational maintenance.

Facility	*Connector*	*Location (figure)*
Intercommunication Set C-1611(*)/AIC	P34	FO-3
	P84	FO-4
	P85	FO-5
	P91	and
	P301A	FO-5.1
	P301F	
	P303A	
	P303B	
	P308	
	P310	
	P600	
	P901	
	P906	
	P907	
	P1403	
	P1901	
	P1903	
	P1904A	
	P2107	
	P2114	
FM liaison Radio Set AN/ARC-54 or AN/ARC-131.	P401	FO-6
	P601L	
	P601R	
	P605	
	P606	
	P609	
	P610	
	P1907	
	P1908	
	P1909	

Facility	Connector	Location (figure)
	P1910	
	P2102	
	P2103	
	P2105	
	P2106	
	P2107	
	P2109	
	P2110	
	P2117	
Uhf command Radio Set AN/ARC-51BX.	P1401	FO-7
	P1402	
	P1403	
	P1405	
	P1407	
	P3801	
	P3802	
Vhf command Radio Set AN/ARC-134.	P1904B	FO-8,
	P1905	FO-9 and
	P1906	FO-9.1
ADF navigation Direction Finder Set AN/ARN-83.	P302	FO-10
	P402	
	P403	
	P404	
	P405	
	P406	
	P407	
	P409	
Gyromagnetic compass system Gyromagnetic Compass Set AN/ASN-43.	P410	FO-11
	P411	
	P415	
IFF system Transponder Set AN/APX-44 or Transponder Set AN/APX-72.	P3	FO-12,
	P8	FO-13,
	P902	FO-13.1
	P903	and
	P904	FO-13.2
	P906	
	P907	
	P908	
	P909	
	P910	
	P911	
	P912	
	P913	
	P914	
Stability and control augmentation system (SCAS).	P700	FO-14
	P701	
	P702	
	P703	
	P704	
	P705	
	P706	
	P707	
	P708	
	P709	
	P710	
	P915	
	P916	
	P917	

Section V. ADJUSTMENTS AFTER REPLACEMENT OR REPAIR

2-62. Extent of Adjustments

Paragraph 2-63 contains installation adjustments for electronic equipment reinstalled in the aircraft after repairs or after the scheduled periodic pullout checks. The procedures described below mus be accomplished prior to further maintenance checks or operation. The following equipment requires adjustment after replacement.

a. Radio Set AN/ARC-54. Whenever the components have been reinstalled, or the frequencies of operation have been changed, or the antenna has been repaired, the AN/ARC-54 must be readjusted. Follow the procedures given in paragraph 2-63 to readjust the AN/ARC-54.

b. Induction Compass Transmitter T-611/ASN. Whenever the components have been reinstalled, or the Compensator, Magnetic Flux CN-405/ASN has been repaired, the T-611/ASN must be readjusted. This adjustment procedure is accomplished by a higher category of maintenance.

2-63. Adjustment of Radio Set AN/ARC-54 or AN/ARC-131

a. Press the FM XCVR and ICS circuit breaker buttons.

b. Place the BAT switch on power control panel to ON, and place the power switch on the fm control panel to PTT (on) (T/R for AN/ARC-131).

c. Place the controls on the control panel to the desired operating condition.

d. Place the RECEIVERS switch for the AN/ARC-54 or AN/ARC-131 on each distribution panel to the up (on) position.

e. Set the VOL control on the pilot's distribution panel to midposition.

f. Set the SQUELCH control on the fm control panel to the CARR position.

g. Adjust the VOL control on the fm control panel until the background noise level in the headset is at a minimum.

h. Adjust the SQUELCH control on the fm receiver-transmitter as instructed below:

(1) Disconnect the coaxial cable at the tail boom disconnect point.

(2) With the SQ ADJ control on the receiver-transmitter turned fully counterclockwise, adjust the VOL control on the control panel until the background noise in the headset is at a minimum.

(3) Rotate the receiver-transmitter SQ ADJ control clockwise until the background noise just

cuts out. Do not rotate the control beyond this point.

(4) Check the squelch setting on several frequencies. If all frequencies selected are not fully squelched, rotate the SQ ADJ control slightly clockwise.

2-64. Calibration and Quadrantal Error Correction

a. General. The aircraft distorts the electromagnetic field around itself in such a manner that, at the antenna, the direction of arrival of the received signal is shifted toward the tail in the first and fourth quadrants, and toward the nose in the second and third quadrants. This is compensated for by introducing quadrantal error correction into the loop antenna system. An RF inductance compensation is inserted between the antenna and the loop antenna cable in the ADF system. If the airframe of the helicopter is modified, the ADF bearing accuracy should be checked.

b. Preliminary Check. Position the aircraft on a compass rose and perform the following procedure on the C-6899/ARN-83 to determine the approximate degree of quadrantal error.

(1) Position function switch to ANT. The tuning meter and frequency dial should be illuminated.

(2) After allowing sufficient time for warmup, set the TUNE switch to the .19-.40 position.

(3) Tune to a station in the 190-kHz to 400-kHz range and peak the tuning meter. Note the frequency dial reading under the hairline.

(4) Position BFO-OFF switch to BFO and adjust TUNE control for a zero beat. The frequency dial indication should be the same as in step (c).

(5) Position BFO-OFF switch to OFF.

(6) Tune to a low frequency station on each of the other two bands (.40-.85 and .85-1.75) to insure that band switching is taking place.

(7) Retune to a low frequency station of known magnetic bearing from the position of the aircraft.

NOTE

If bearing pointer deviation exists in steps (8), (9), or (10) below, discontinue check and perform procedures in *c* below.

(8) Position function switch to ADF. The RMI azimuth card should coincide with the aircraft magnetic heading and the bearing pointer (No. 1) should indicate the correct magnetic bearing to the station.

(9) Using the fast speed position (full deflection) on the loop switch, rotate the bearing pointer 90 degrees right, and then 90 degrees left of the ADF bearing. At both the right and left displaced bearing indication points, reset the loop switch to center. The bearing pointer should return to the original bearing indication at a rate not less than 25 degrees per second. It may be necessary to switch the function switch to LOOP in order to obtain 90° bearing pointer deflection. then switch back to ADF to check pointer slowing rate.

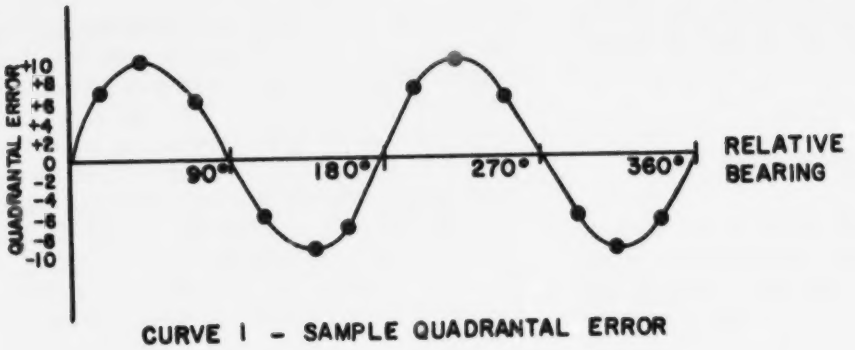
(10) Position function switch to LOOP. Using the slow speed position (half deflection) of the loop switch, rotate bearing pointer 360 degrees in each direction. Two distinct null positions, 180 degrees from each other, should be encountered. Stop the bearing pointer on the null that points away from the station. Set the function switch to ADF. Bearing pointer should rotate 180 degrees and again indicate the magnetic bearing to the station.

NOTE

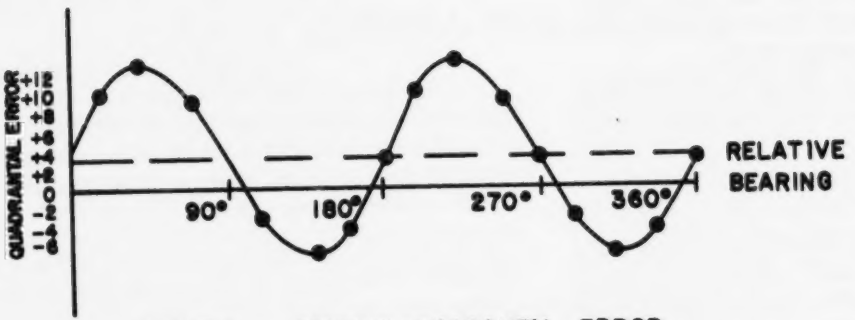
ADF bearing measurements are subject to error due to night effect. Therefore, all measurements must be made not earlier than 2 hours after sunrise, and not later than 2 hours before sunset.

c. Airborne Measurement of Quadrantal Error. Airborne measurement of quadrantal error requires that the aircraft fly over a fixed point at least 10 miles from a low frequency radio station, while holding a fixed heading. The most convenient fixed point is an omnirange station because omnirange stations are easily located from the air and their angular position with respect to a low frequency radio station is available from radio navigation charts. If available, a radio station transmitting between 200 and 400 kHz should be used and the surrounding terrain should be flat. The aircraft shall be maintained in level flight attitude during the calibration to minimize measurement errors. The calibration should be performed on a calm day to minimize drift and crab angle problems.

(1) Make a worksheet similar to the one shown in the chart below. The relative bearings to the station for which measurements are to be made are shown in column 1. The magnetic bearings for column 2 should be calculated prior to flight by subtracting the actual relative bearing



CURVE 1 - SAMPLE QUADRANTAL ERROR



CURVE 2 - SAMPLE QUADRANTAL ERROR

EL1520-221-20-TM-100

Figure 2-18. Sample quadrantal error curves.

(col 1) from the calibration point to station bearing (obtain from map). When the actual relative bearing is larger than the aircraft magnetic heading, add 360 degrees to the aircraft magnetic heading before subtracting. Compare the completed column 2 with the sample situation illustrated in figure 2–18.

Quadrantal error table (airborne calibration)
(for 320° Magnetic Bearing to Selected Station)

(1) Relative Bearing to Station Selected	(2) Aircraft Magnetic Heading	(3) Indicated Magnetic Bearing to Station Selected	(4) Quadrantal Error Column (3) —320°	(5) Quadrantal Correction Required
0°	320°	320°	0°	0°
150°	170°	327°	+ 7°	− 7°
300°	20°	326°	+ 6°	− 6°
90°	230°	320°	0°	0°
240°	80°	314°	− 6°	+ 6°
30°	290°	315°	− 7°	+ 7°
180°	140°	326°	+ 6°	− 6°
330°	350°	326°	+ 6°	− 6°
120°	200°	321°	+ 1°	− 1°
270°	50°	313°	− 7°	+ 7°
60°	260°	314°	− 6°	+ 6°
210°	110°	320°	0°	0°
315°	5°	310°	−10°	+10°
45°	275°	330°	+10°	−10°
135°	185°	310°	−10°	+10°
225°	95°	330°	+10°	−10°

NOTE

Data in columns 2 through 5 are for illustration purposes only.

(2) Fly to the vicinity of the selected fixed point. Position mode switch to ANT and tune ADF to the radio station. Position mode switch to ADF.

(3) Fly over the selected fixed ground point with the aircraft headed directly toward the ground station. This is the first selection shown in the chart ((1) above). The ADF pointer of the RMI should be pointing directly at the RMI heading marker at this zero relative bearing to the ground station. If it is not, the antenna may not be properly aligned with the fore-to-aft axis of the aircraft and should be checked after completion of the flight.

(4) At the moment the aircraft is directly over the fixed point, record the indicated magnetic bearing to the station (the bearing on the compass card indicated by the ADF pointer) in column 3 of the chart ((1) above).

(5) Continue to fly straight for a short time. Then make a broad turn and fly over the fixed point (landmark) with the second aircraft magnetic heading. Again, record the indicated magnetic bearing to station in column 3.

(6) Repeat step (5) for each of the remaining aircraft magnetic headings. The flight pattern of an aircraft performing this is shown in figure 2–19.

(7) Subtract the magnetic bearing to the station (from the fixed point) from each indicated magnetic bearing. Enter the results in (col 4). The sample quadrantal error in the chart given in (1) above shows positive quadrantal error in the first quadrant but error may be negative in the first quadrant.

(8) Plot a graph of quadrantal error against relative bearing to the station. Refer to *d* below for selection of the quadrantal error corrector.

d. Selection of Quadrantal Error Corrector.

(1) Check that there are no values far off the curve plotted in *c*(1) above. Large variations from the expected values are evidence of low quality data.

(2) Compare the plotted quadrantal error curve with the sample curves 1 and 2 as shown in figure 2–18. If the curve is centered above or below the horizontal zero-degree quadrantal error axis as in figure 2–18, the loop antenna is probably not aligned with the aircraft fore-to-aft axis. This misalignment should be corrected or some noncorrectable residual error will remain after calibration.

(3) Determine the maximum quadrantal error indicated in the quadrantal error curve. This is the magnitude of required error correction remaining.

(4) Algebraically subtract the maximum error determined in (3), using the sign of the first quadrant error, from the correction in degrees of the currently use 582A–( ) corrector to obtain the correction required from the final 582A–( ).

(5) In the event a negative number of degrees correction is required, a 582A–( ) with subscript N must be selected.

(6) Select the appropriate quadrantal error corrector from chart ((8) below).

(7) Install the selected 582A–( ) quadrantal error corrector.

(8) Repeat the procedure specified in *c* above as a calibration check.

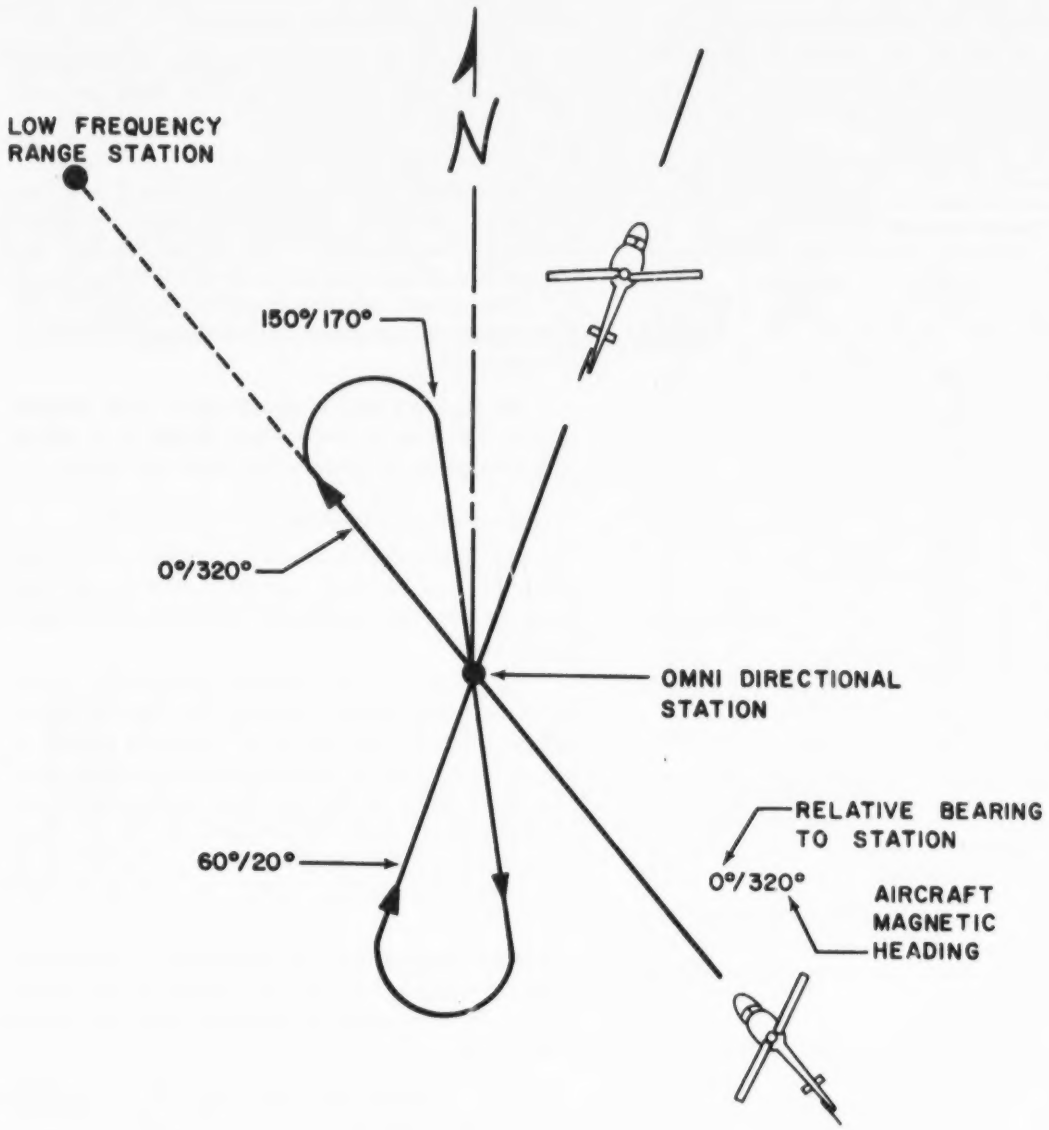


Figure 2-19. Typical adf system calibration pattern.

Quadrantal Error Correctors

Quadrantal error corrector	Correction in degrees (not including correction of 137A-4)	Collins part number
582A-10N	−10	522-3181-005
582A-8N	− 8	522-3180-005
582A-6N	− 6	522-3179-006
582A-4N	− 4	522-3178-006
582A-2N	− 2	522-3177-005
582A-0	0	522-3176-016
582A-2	2	522-2736-006
582A-4	4	522-2737-005

Quadrantal Error Correctors

Quadrantal error corrector	Correction in degrees (not including correction of 137A-4)	Collins part number
582A-6	6	522-2738-005
582A-8	8	522-2739-005
582A-10	10	522-2740-016
582A-12	12	522-2741-005
582A-14	14	522-2742-005
582A-16	16	522-2743-005
582A-18	18	522-2744-005

CHAPTER 3

BLOCK DIAGRAM ANALYSIS

3-1. Configuration Systems and Facilities

The electronic equipment configuration (FO-2) in the AH-1G provides the pilot and gunner with the following functional systems: interphone, communications, navigation, identification, and stability and control augmentation.

a. Interphone (fig. 3-1). The interphone control provides pilot and gunner with interphone communications and selection of a radio set for communication.

b. Communications.

(1) *Fm communications* (fig. 3-2). The fm liaison facility (AN/ARC-54 or AN/ARC-131) provides pilot and gunner with two-way frequency modulated communication. The Fm set is also used for homing operation.

(2) *Uhf communications* (fig. 3-3). The uhf command facility (AN/ARC-51BX) provides the pilot and gunner with two-way, amplitude-modulated, short-range, command communication.

(3) *Vhf communications* (fig. 3-4). The vhf command facility (AN/ARC-134) provides the pilot and gunner with two-way, amplitude-modulated, air-to-air and air-to-ground communication.

c. Navigation.

(1) *Fm homing.* Fm homing is provided through the use of the AN/ARC-54 or the AN/ARC-131 (fig. 3-2).

(2) *Automatic direction finder.* The automatic direction finder facility (AN/ARN-83) (fig. 3-7) is used to provide the pilot and gunner with adf readings.

(3) *Gyromagnetic compass system.* The gyromagnetic compass system facility (AN/ASN-43) (fig. 3-8) provides pilot and gunner with accurate heading information.

d. Identification. The IFF transponder AN/APX-44 or AN/APX-72 (fig. 3-5 and 3-6) provides the pilot with a system of identification.

e. Stability and Control Augmentation System. The SCAS (FO-1) is used by the pilot or gunner to assist in correcting the stability of the helicopter by providing a dampened airframe for external disturbances.

3-2. Control, Intercommunications Set C-1611(*)/AIC (fig. 3-1)

a. The C-1611(*)/AIC is a solid-state unit consisting of a microphone preamplifier with automatic gain control (agc), a feedback signal line control, a microphone power amplifier, a headset amplifier, and switching circuits for selecting the appropriate communication receiver-transmitter. The C-1611(*)/AIC requires only 28-volt direct current (dc) power for complete operation and is ready for service as soon as the power is applied through the ICS 5-ampere circuit breaker.

b. A group of 150-ohm resistors is provided across one section of the transmitter interphone selector switch to provide constant impedance to the input of the transmitter modulator when a transmitter is selected. Transmitter keying control is provided by another section of the same switch. The C-1611(*)/AIC may be operated in any one of three modes as determined by the settings of the transmitter-interphone select switch and RECEIVERS switches S2 through S7 in the control circuits. The three modes of operation used are: two-way radio communication, receiver monitoring, and intercommunication (interphone and private interphone) between pilot and gunner. The NAV receiving switch and associated circuitry is designed to accept audio from three navigation receivers, and mix the audio, and feed this signal into the intercommunication system. The adf receiver is connected to the NAV receiving mixer switch. The switches other than the NAV switch are connected as shown below.

RECEIVERS switch position	*Function*
1	AN/ARC-54 or AN/ARC-131 audio.
2	AN/ARC-51BX audio.
3	AN/ARC-134 audio.

c. In the two-way radio communication mode of operation, the microphone signal is connected to the microphone preamplifier, the microphone amplifer, and the control circuit to the radio transmitter selected by the transmit-interphone selector switch. The output of the radio receiver associated with the selected radio transmitter is also selected by the transmit-interphone selector switch (through the control circuits to the headset amplifier) for amplification and application to the earphones. The pilot's cyclic stick switch is set to RADIO to transmit and to ICS for interphone operation. Discrete Signal Discriminator MD-736/A permits only signals of certain level or magnitude to pass through the audio circuits to modulate the transmitter selected at the C-1611(*)/AIC. The discrete signal discriminator is used in conjunction with the AN/ARC-54 and TSEC/KY-28.

d. In the control circuits, all receiver outputs in the helicopter (except the emergency receiver output) are selected by RECEIVERS switches. Regardless of the selected mode of operation, the output of the emergency receiver is applied through the control circuits to the headset amplifier. The output signal of the receiver selected by a RECEIVERS switch is passed through the control circuits to the headset amplifier where it is amplified and applied to the earphones. If the pilot or the gunner desires to intercommunicate, they may do so by setting the transmit-interphone selector switch to INT or to PVT with the cyclic switch set to ICS. Through this arrangement, the signal is fed to the microphone preamplifier, the

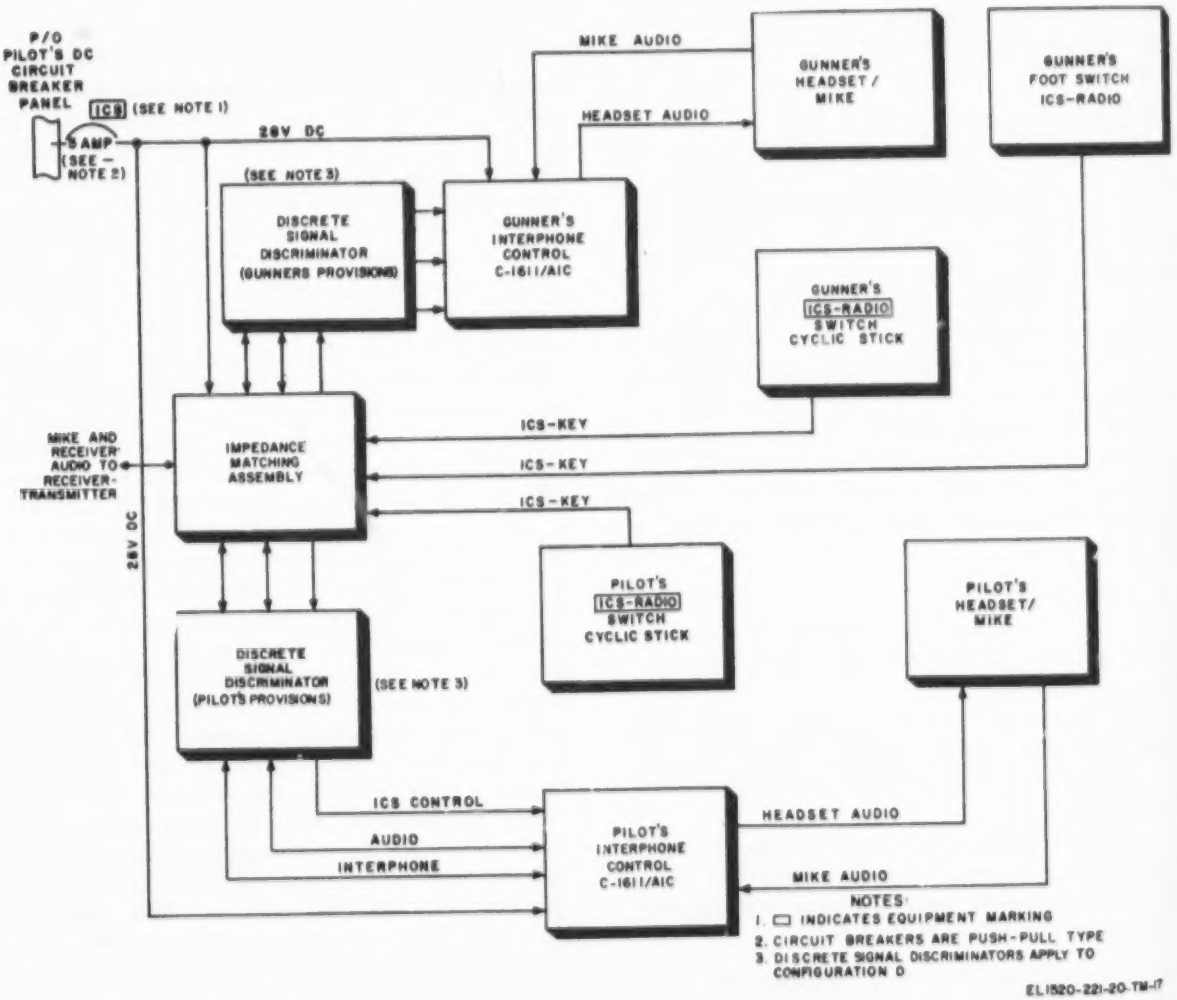


Figure 3-1. Interphone facility, block diagram.

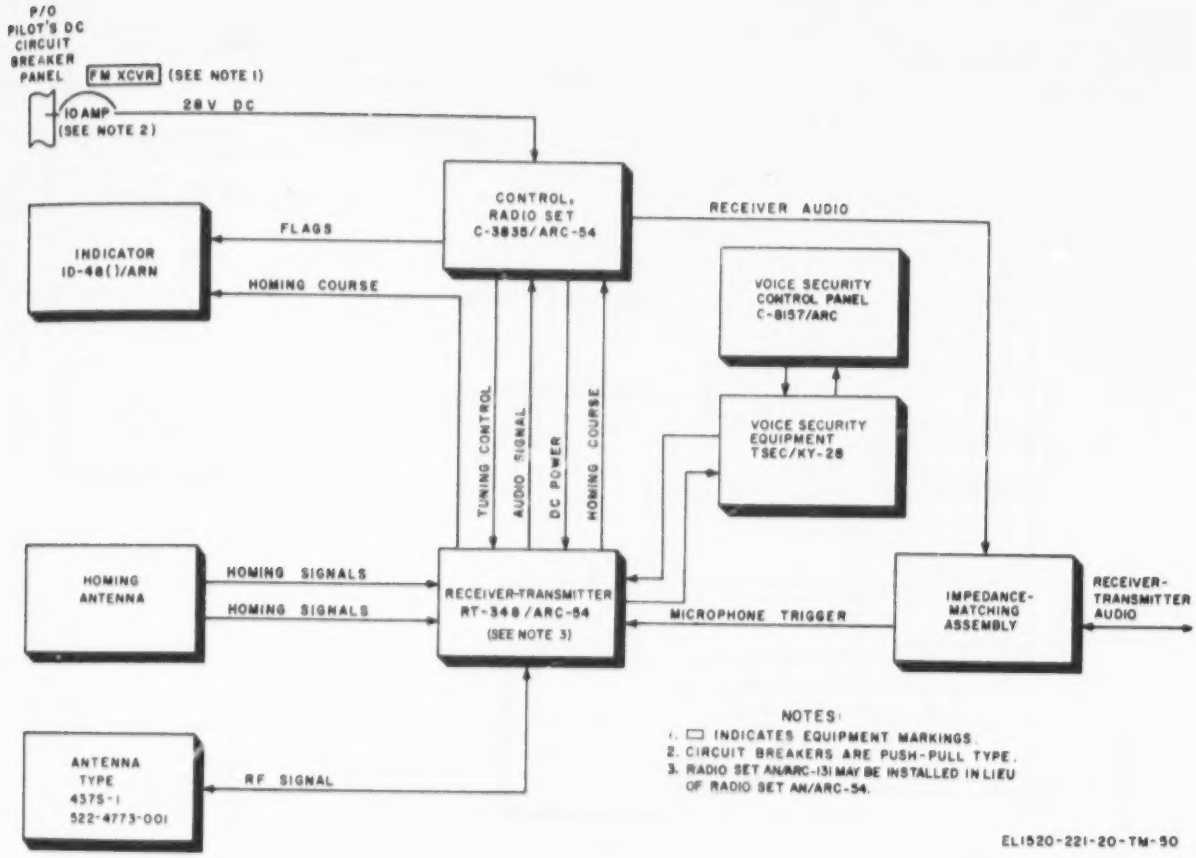


Figure 3-2. Fm liaison facility, block diagram.

microphone amplifier, and the control circuits to the headset amplifier and the interphone or private interphone line. The signal portion applied to the headset amplifier is received by the earphone as sidetone. The amplified signal is applied to the interphone line and received by other stations connected to the same line.

c. The C-1611(*)/AIC has positions for four receiver-transmitters; however, only three are used in the AH-1G. The rotary switch has a total of six positions which are connected as follows:

Position	*Function*
PVT	Private intercom
INT	Intercom
1	AN/ARC-54 or AN/ARC-131
2	AN/ARC-51BX
3	AN/ARC-134

3-3. Radio Set AN/ARC-54 or AN/ARC-131 (fig. 3-2)

a. The Fm liaison set is a lightweight, airborne radio set that provides the pilot and gunner of the helicopter with two-way communication between helicopter and ground stations within the fm band of 30.0 to 69.95 megahertz (MHz).

b. Primary +28 volts dc is supplied through circuit breaker FM XCVR on the dc circuit breaker panel. Components of the AN/ARC-54 or AN/ARC-131 include the RT-348/ARC-54 or the RT-823/ARC-131, the C-3835/ARC-54 or the C-7088/ARC-131, and Antenna AS-2285/ARC (which is mounted inside the pylon fairing). A leadfoil antenna, or antenna part number 209-075-292, is also used with the set for homing operation. The ID-48/ARN is used as the homing indicator. Voice security operation with the AN/ARC-54 is provided by the TSEC/KY-28. The C-8157/ARC controls power application and mode of operation of the TSEC/KY-28.

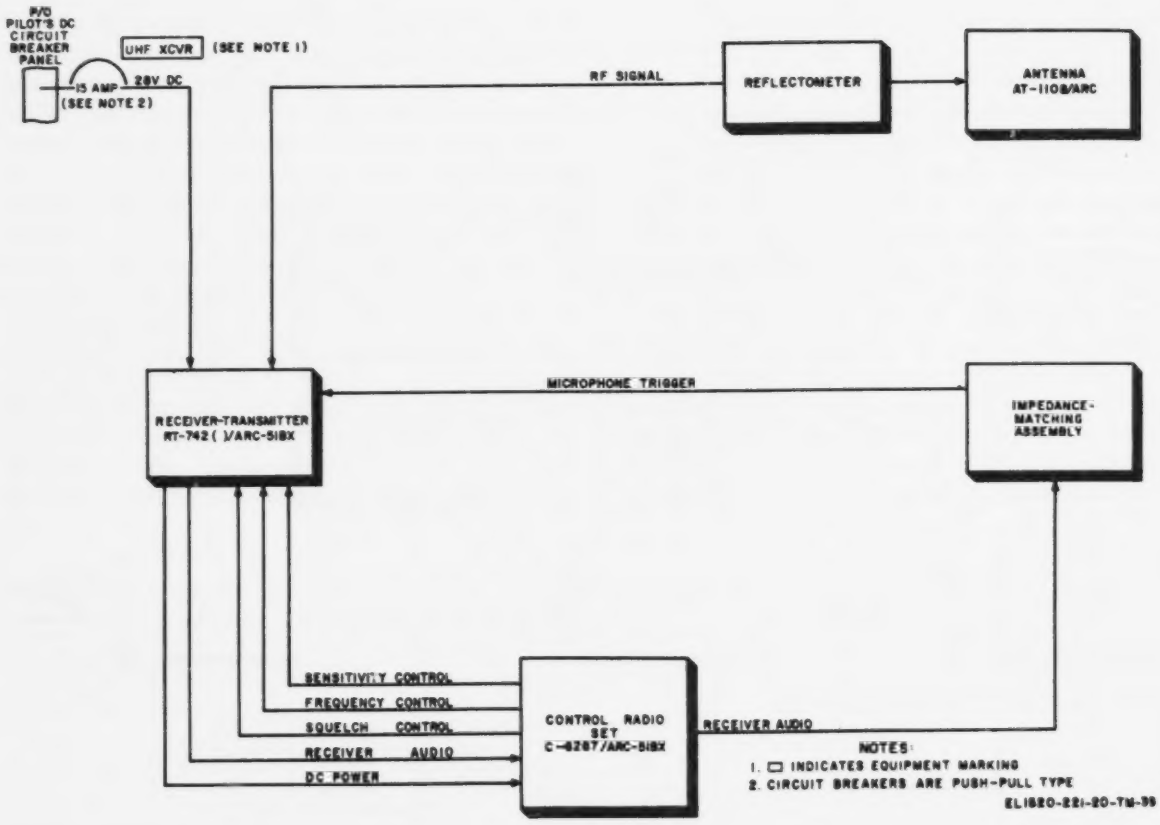


Figure 3-3. Uhf command facility block diagram.

3-4. Radio Set AN/ARC-51BX (fig. 3-3)

a. The AN/ARC-51BX Uhf command set provides amplitude modulation (am.) voice communication within the uhf band of 225.0 to 399.95 MHz in increments of 0.05 MHz. Two-way communication is provided for air-to-air and air-to-ground communication. Transmission and reception are conducted on the same frequency using a common antenna. Components of the AN/ARC-51BX include the RT-742(*)/ARC-51BX, the MT-2653/ARC, the C-6287/ARC-51BX, the HD-615/ARC-51X, and the ID-1003/ARC. Primary power +28 volts dc is applied to the set through 15-ampere circuit breaker UHF XCVR.

b. The receiver-transmitter monitors a fixed frequency guard channel for emergencies. The pressurized receiver-transmitter contains an external blower and reflectometer (power output meter) installed on the receiver-transmitter case. Connections for primary power and signals are made on the front of the receiver-transmitter and at the rear of the control panel. Connections to Antenna AT-1108/ARC are made from the reflectometer.

3-5. Radio Set AN/ARC-134 (fig. 3-4)

a. Radio Set AN/ARC-134 is a lightweight, airborne radio set that provides the pilot and gunner of the helicopter with two-way communication between the helicopter and ground stations within the vhf frequency range of 116.000 through 149.975 MHz.

b. Primary +28 volts dc is supplied through circuit breaker VHF XCVR on the dc circuit breaker panel. Components of the vhf radio include the RT-857/ARC-134, the MT-3791/ARC-134, and the C-7197/ARC-134. Antenna AT-1108/ARC is used with the set as a common receiving and transmitting antenna.

3-6. Transponder Set AN/APX-44 (fig. 3-5)

a. This facility identifies the aircraft as

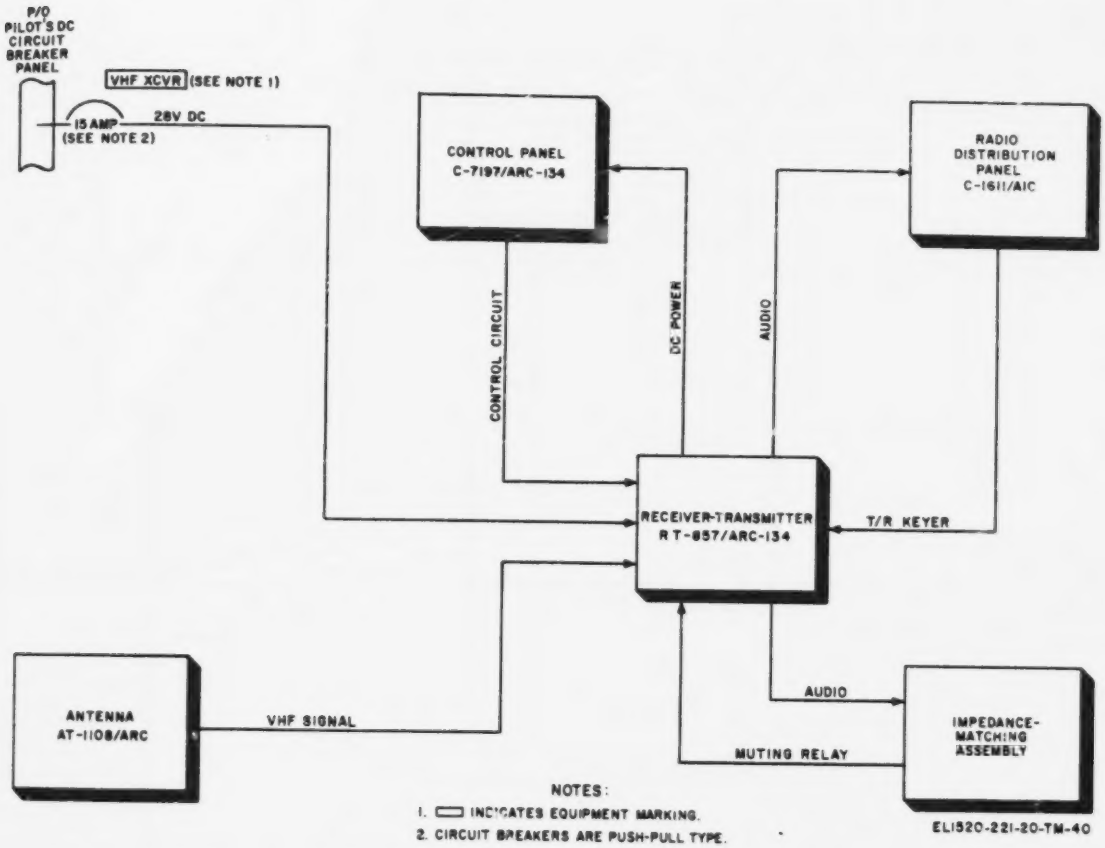


Figure 3-4. Vhf command facility, block diagram.

friendly to ground radar interrogating stations. The transponder set receives all interrogations through Antenna AT-884/APX-44. The antenna receives and transmits horizontally polarized signals in all directions. The received signal frequency range is 1,010 to 1,030 MHz, and the transmitting frequency range is 1,090 to 1,110 MHz. The signal received by the antenna is fed through the duplexer to the receiver section of the receiver-transmitter. The duplexer allows the transponder set to receive and transmit with the same antenna without using mechanical switching parts. The receiver is a superheterodyne with broadband characteristics to accommodate rf (radio frequency) pulses without distortion. The receiver sensitivity is controlled by the NORM and LOW positions of the master control in Control, Transponder Set C-2714/APX-44 and, automatically, by the interrogation rate. The video pulses from the receiver have had all undesirable pulses (such as pulses of unequal amplitude, pulses too narrow in width, or pulses spaced less than 2 microseconds (μsec) after the first pulse) eliminated. The video pulses from the receiver are a pulse pair for each interrogation; the time between the pulses of a pair will be either 3, 5, or 8 μsec, depending on the interrogation mode.

b. The video from the receiver, in the form of interrogation pulse pairs, is applied to the decoder, which performs the following functions:

(1) Determines whether a proper interrogation has been received.

(2) Determines interrogation mode of the received signal.

(3) Generates mode-sensing gate pulses that enable the mode sensitivity encoder circuits to accept a selected reply train of pulses.

(4) Generates main gate pulses to blank out all interrogations for a period of 120 μsec after a

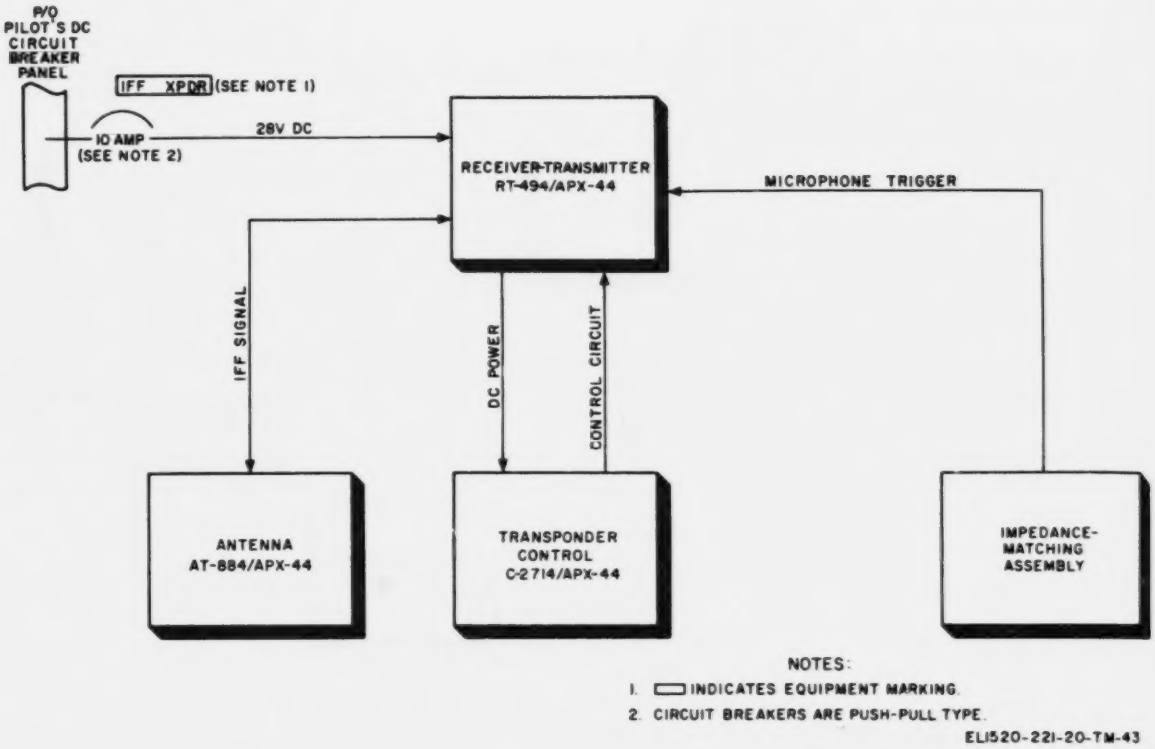


Figure 3–5. Iff transponder facility, configurations A, B and C, block diagram.

received pulse pair (which allows time to complete a reply and avoids multiple replies) and to synchronize encoder reply train construction.

3–7. Transponder Set AN/APX–72 (fig. 3–6)

The aircraft identification facility is Transponder Set AN/APX–72. This facility identifies the aircraft as friendly to ground radar interrogating stations. The transponder receives, decodes, and responds to characteristic interrogation pulses by iff, ground stations supplemented with the selective identification feature (sif), and to civil ground radar systems. The receiver section operates on a single preset frequency of 1,030 MHz, and the transmitter operates on a single preset frequency of 1,090 MHz. The equipment can also be used to transmit specially coded emergency signals or position identifying signals, even though the set is not being interrogated by a ground station. The transmitted pulses are also supplied as audio pulses to the audio control panel. The audio signal from the identification facility is connected directly to the audio amplifiers in the interphone-audio system and will be heard on the headsets regardless of audio control panel switch setting.

3–8. Direction Finder Set AN/ARN–83 (fig. 3–7)

a. Automatic direction finding is provided by the AN/ARN–83 which is an airborne automatic direction finder (adf) system used for both visual and aural facilities for adf homing, radio range navigation, and position fixing. The system presents a visual indication displaying the direction to transmitting station, and an audio signal for identifying continuous-wave (cw) transmission in the frequency range of 190 to 1,750 kHz. The audio signal also aids in determining aural nulls when used for aural null homing and manual direction finding. Aural null indicates the direction of the transmitting station. Two antennas are used for direction finding: a Type 137A–7 loop antenna for direction determination, and a 209–033–133 sense antenna for elimination of a false null for reception of am. broadcast and cw transmission.

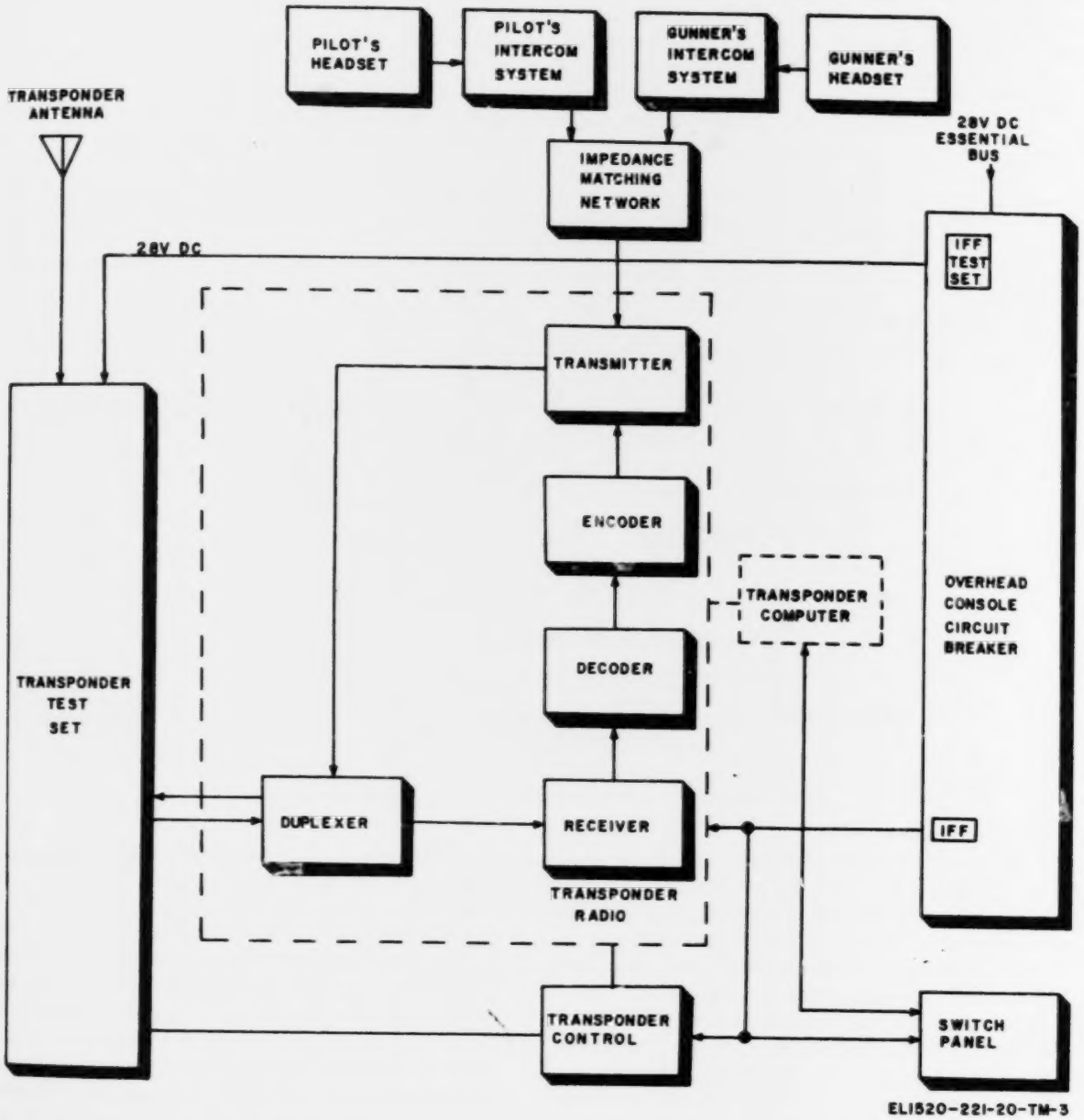


Figure 3–6. Iff transponder facility, configuration D, block diagram.

b. Components of adf set include a 209–030–133 sense antenna, a Type 137–A–7 loop antenna, Radio Receiver R–1391/ARN–83, and Direction Finder Control C–6899/ARN–83. Indicator, Radio-Magnetic Compass ID–998/ASN and Indicator, Course ID–250/ARN display the azimuth or bearing of the radio station. Primary power (+28-volt dc) is applied to the adf set through circuit breaker ADF RCVR on the dc circuit breaker panel.

3–9. Gyromagnetic Compass Set AN/ASN–43 (fig. 3–8)

a. The compass set consists of Transmitter, Induction Compass T–611/ASN with Compensator, Magnetic Flux CN–405/ASN, Directional Gyro

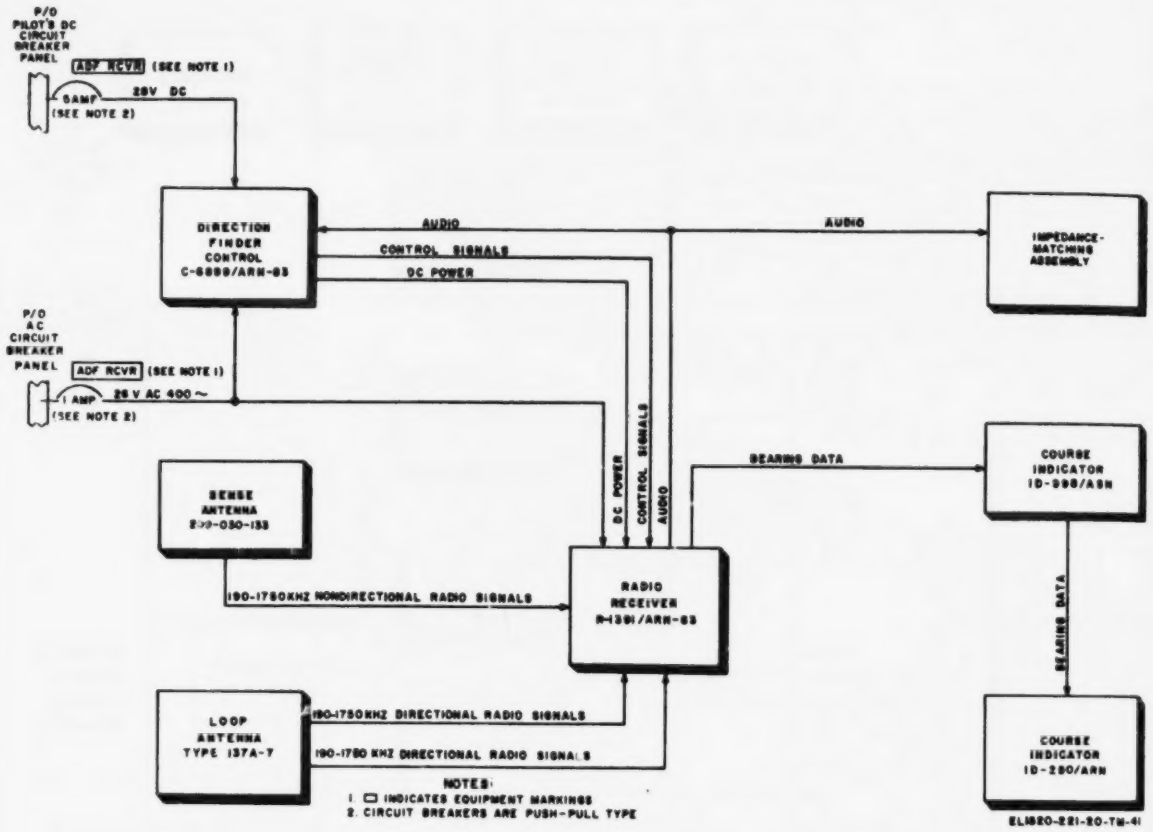


Figure 3-7. Adf navigation facility, block diagram.

CN-998/ASN-43, Indicator Radio-Magnetic Compass ID-998/ASN, Indicator, Course ID-250/ARN, and a COMPASS SLAVING switch. The gyromagnetic compass system is a directional indicating system in which the indication of a magnetic compass is stabilized by a gyro. The gyro provides a stable magnetic reference from which the heading of the helicopter may be determined. The remote compass transmitter slaves the spin axis of the gyro to the magnetic heading of the helicopter. The remote compass transmitter is a direction-sensing unit and is provided with a single-cycle error compensator to reduce distortion caused by magnetic parts and electrical equipment in the vicinity of the remote compass transmitter. The COMPASS SLAVING switch is used to start and stop gyro slaving. The output signals of the directional gyro are displayed on the pilot's and copilot's compass indicators. The indication represents the magnetic heading of the helicopter in degrees.

b. The remote compass transmitter contains a flux valve which is suspended in the horizontal plane. The remote compass transmitter develops a three-phase synchro stator voltage that represents the sensed direction of the helicopter. The single-cycle error compensator provides a magnetic-quadrant error correction for the flux valve directional signal to compensate for any error introduced by the airframe or any magnetic or electrical equipment in the vicinity. The compensated flux valve directional signal (reference heading) is applied to the magnetic compass indicator. A heading error signal is developed and applied directly to directional gyro. If the directional gyro is misaligned with the sensed direction, a synchro heading error signal is developed that is amplified in the directional gyro. The amplified signal is a gyro slaving drive signal. The drive signal controls a torque motor that drives the gyro into alignment with the remote compass transmitter. This action slaves the gyro to the earth's magnetic meridian.

The COMPASS SLAVING switch allows the operator to slave or free the gyro. The gyro can be slaved only when the COMPASS SLAVING switch is placed to MAG. When the switch is placed to DG, a relay in the directional gyro operates to cut off the drive signal to the control field of the slaving torque motor in the directional gyro. The gyro then is no longer slaved to the remote compass transmitter, and the heading will be determined by the directional gyro only. The output (stabilized reference) of the directional gyro is applied to the magnetic compass indicator as magnetic heading synchro data.

c. Primary 115 volts ac is supplied through

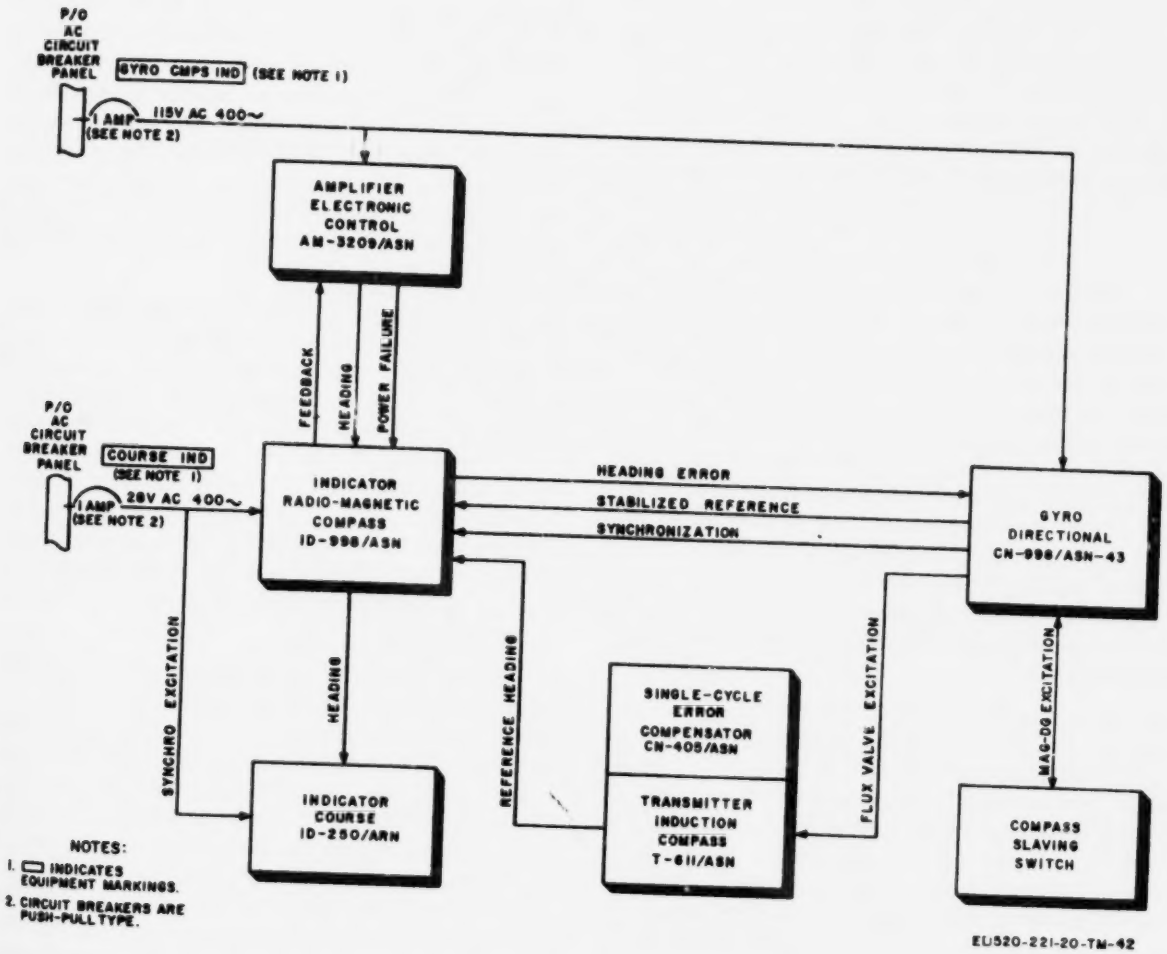


Figure 3–8. Gyromagnetic compass facility, block diagram

circuit breaker GYRO CMPS ac circuit breaker panel.

3-10. Stability and Control Augmentation System (fig. FO-1)

The AH-1G Stability and Control Augmentation Sytem is a multi-loop type augmentation system to cover both of the major requirements for a stable weapons delivery platform. It augments the control system to provide an airframe that not only has the desired damping characteristics for disturbing functions, but has desired response characteristics for pilot inputs and a preset rate of control response. This feature has been achieved by the addition of an electrical signal network that responds each time the pilot makes a control system input. AH-1G SCAS is described as a three-axis stability and control augmentation system, integrated into the conventional helicopter fore-and-aft, lateral and directional flight controls. Rate gyros provide the electrical signals for airframe damping against external disturbances. Control motion transducers associated with the pedal and stick provide a compensating electrical signal during pilot control inputs to prevent the SCAS from opposing the pilot's inputs. The system consists of two circuit breakers for protection and power, a control panel, the sensor amplifier unit, three electrohydraulic servo actuators, three control motion transducers, three solenoid controlled hydraulic valves, pylon transducers, a pylon compensation unit, and the associated electrical network.

a. Power is furnished to the SCAS system by two circuit breakers: a 5-ampere dc SAS PWR for SCAS control is on the DC circuit breaker panel, aft section of the pilot's right console. A 1-ampere SAS PWR ac circuit breaker for SCAS power is on the AC circuit breaker panel, left console. Closing these circuit breakers applies ac and dc power to the SCAS control panel where it is, in turn, distributed to the other components of the system.

b. The SCAS control panel has a two-position POWER switch which controls both the 115-volt ac and 28-volt dc power to the SCAS. The three channel engage switches, labeled PITCH, ROLL, and YAW, are solenoid hold switches which control selective engagement of the three channels. Any single channel or combination of channels may be engaged. The three indicator lights, labeled PITCH, ROLL, and YAW NO GO, indicate an out-of-tolerance system condition, or an unexpired warmup period. Engagement of a channel should not be attempted if the appropriate NO GO light is lighted. All channels will disengage upon failure of either ac or dc power failure to prevent erratic operation. The panel provides the entire operational control of the SCAS, except that both the pilot and gunner have emergency disengage switches on the cyclic stick grips.

c. The sensor amplifier unit is operationally the center of the AH-1G SCAS and contains the components and circuitry to implement the stabilization of the helicopter. It connects the components of the system, receives and sums input signals, and produces the electrical inputs to the servo actuators for airframe damping. In the sensor amplifier unit, the rate signal from the rate gyro, the control position signal, and the actuator feedback signal are summed and shaped in the compensating network to provide the desired helicopter control response.

d. Actuators are installed in series in the control tubes of each axis of the flight control system (fore and aft cyclic, lateral cyclic, and antitorque). They are an integral part of the aircraft control system. The pitch and roll actuators control movement of the swashplate without pilot cyclic stick movement. The yaw actuator changes the tail rotor pitch without pilot pedal movement. These actuators extend or retract by signals from the sensor amplifier unit to give the limited authority for airframe damping against external disturbances.

e. Control motion transducers (linear motion potentiometers) are installed on bellcranks between the pilot control stick or pedals and the actuator. As the control moves, the bellcrank moves and the movement is induced into the transducer. The transducer movement resulting from control inputs by the pilot gives a signal to the sensor amplifier unit. These signals are summed with the rate gyro signals to provide the correction signals to the servo valve for the desired helicopter movement. These transducers allow the pilot to override the stability augmentation systems at empt to dampen any disturbances.

f. A hydraulic solenoid valve is installed in the hydraulic line to each of the three series actuators to control the hydraulic pressure to the actuators. These valves are 28-volt dc operated valves; when energized, they are open to port pressure to the actuator servo, and when deenergized, the pressure is shut off.

g. The pylon compensation unit relies on two right-hand mounted pylon transducers for position information. The two pylon transducers are linear potentiometers, one mounted to each right-hand pylon mount forward and aft. These transducers are installed between the pylon mounts and permanent airframe structure to sense pitch motion of the pylon. Output signals of the two linear transducers are inserted into the pylon compensation unit, where the signals are summed, shaped, attenuated, and inserted into the roll channel of the sensor amplifier for retardation of the pylon oscillation. Helicopters 68-17032 and subsequent, or those having MWO 55-1520-221-20/9 accomplished, utilize a single pylon transducer.

3-11. Proximity Warning Device YG-1054

Proximity Warning Device YG-1054 is an airborne receiver-transponder which provides the pilot with an audio visual alarm when similarly equipped aircraft are within the protected air-space surrounding his vehicle. The system regards any similarly equipped helicopter coming within a selective distance range of 1,000, 2,000 or 5,000* feet and within an altitude band of plus or minus 300 feet, as an intruder. Whenever an intruding aircraft enters the protected airspace surrounding the helicopter, the system automatically compares the two altitudes and activates an audio and visual alarm system. The audio alarm is a beeping tone in the aircraft intercommunication system. The visual alarm is a flashing arrow segment on the front of the receiver-transponder panel, indicating that the intruding helicopter is either at a higher altitude, the same altitude, or at a lower altitude than the helicopter. These warnings alert the pilot to the presence of helicopters within a set range in order to avoid a mid-air collision. The Proximity Warning Device is operated by 28 volts dc from the essential bus and is protected by the PRX WARN circuit breaker on the circuit breaker panel. Integral lighting, (operated by the 28 volts dc from the pilot's console lighting control) is incorporated in the receiver-transponder.

***NOTE**

Earlier model transponder with part number HG1001ACD1 have a maximum range of 3000 feet.

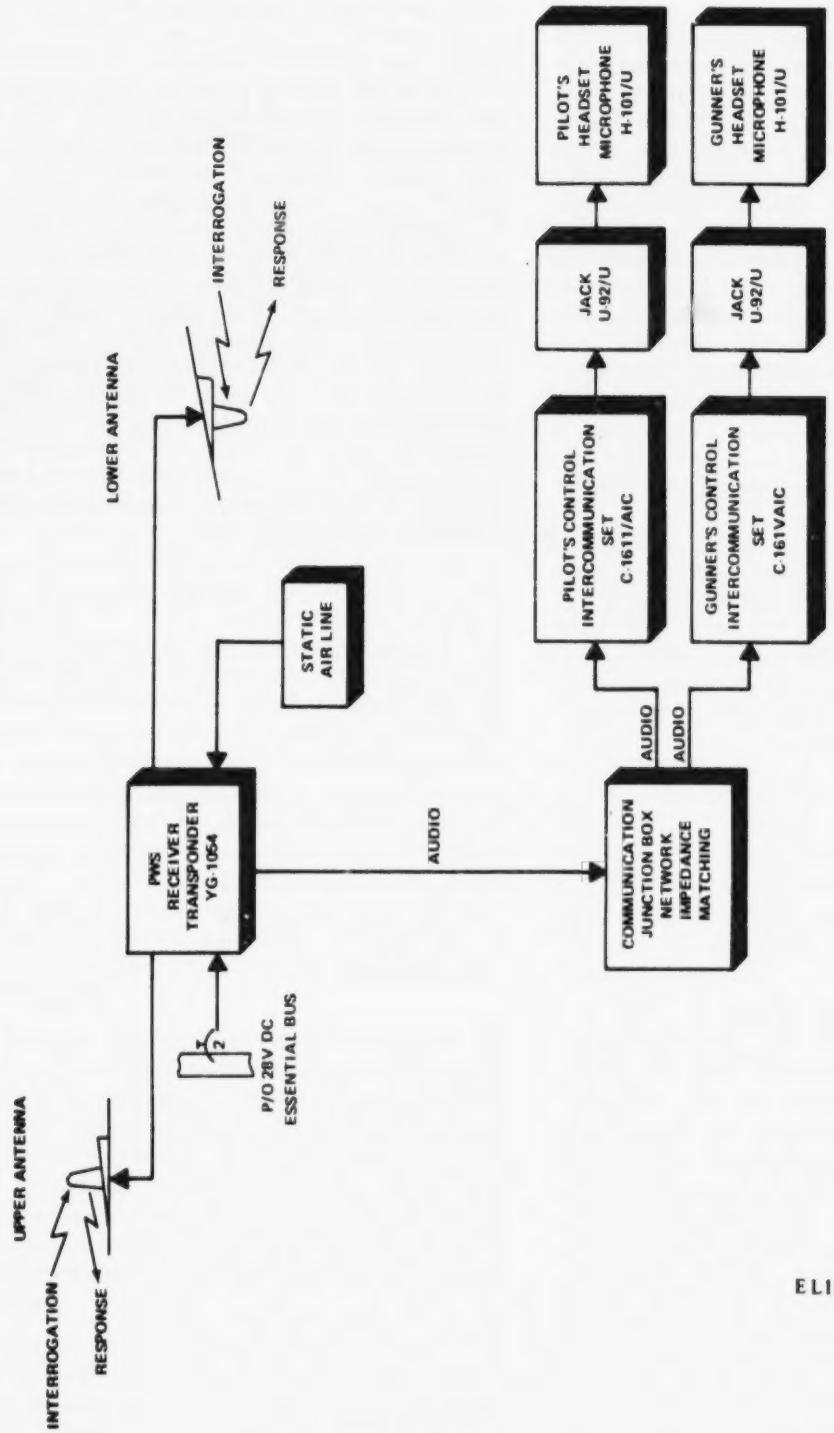


Figure 3-8.1. Proximity warning device block diagram

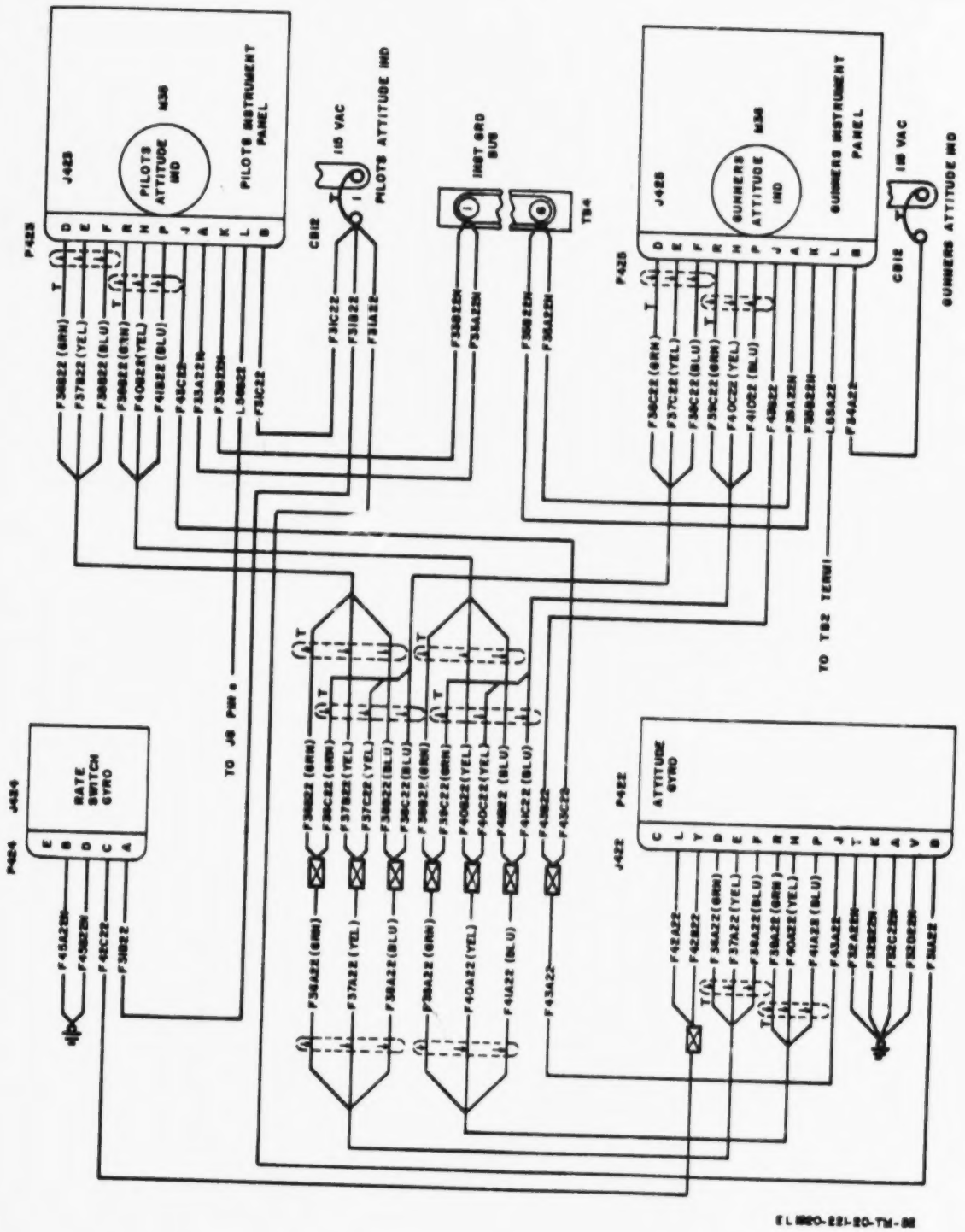


Figure 3-9. Attitude indicator system schematic, configuration D.

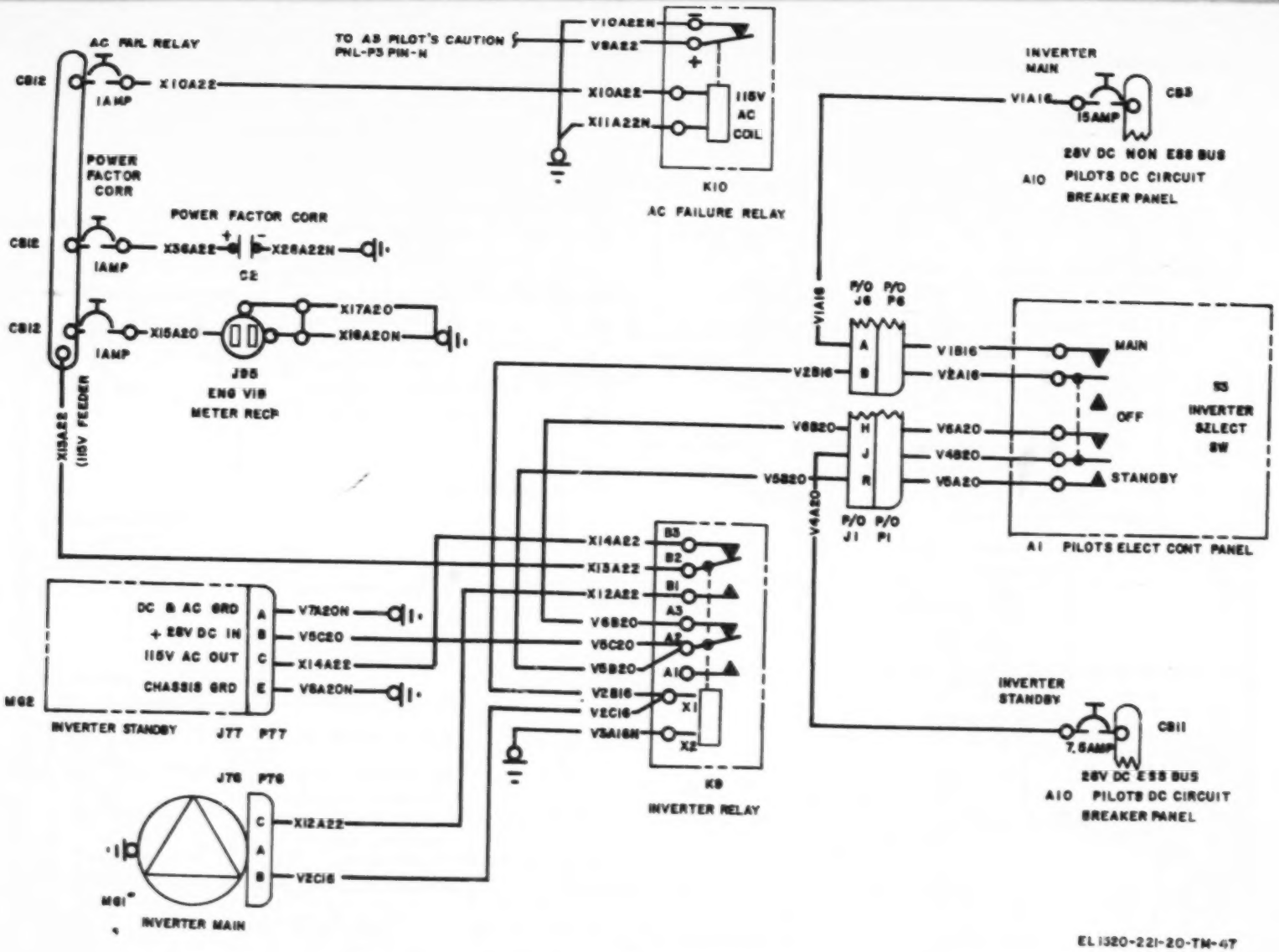


Figure 3–10. Ac power system wiring diagram prior to aircraft 68–15000.

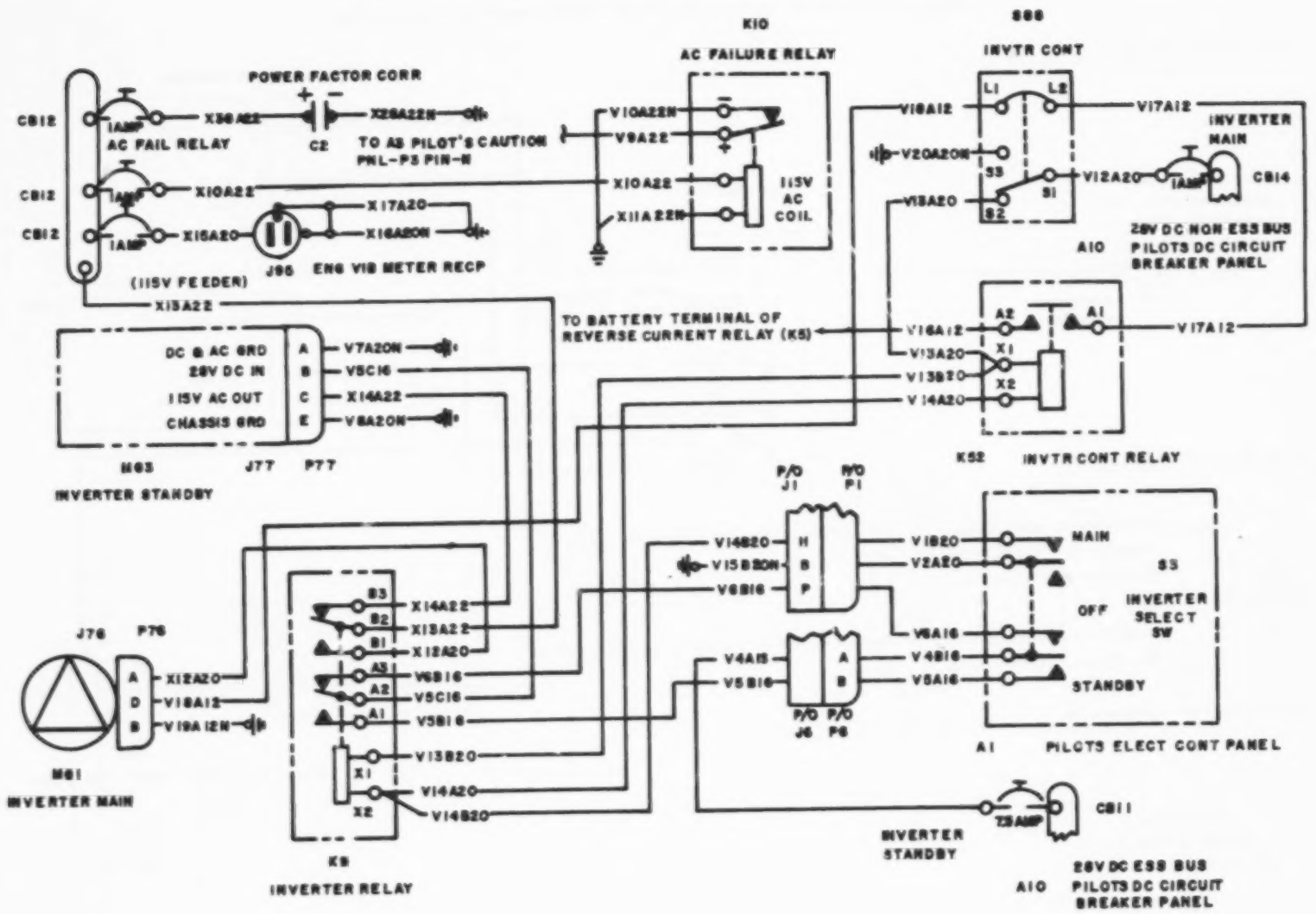
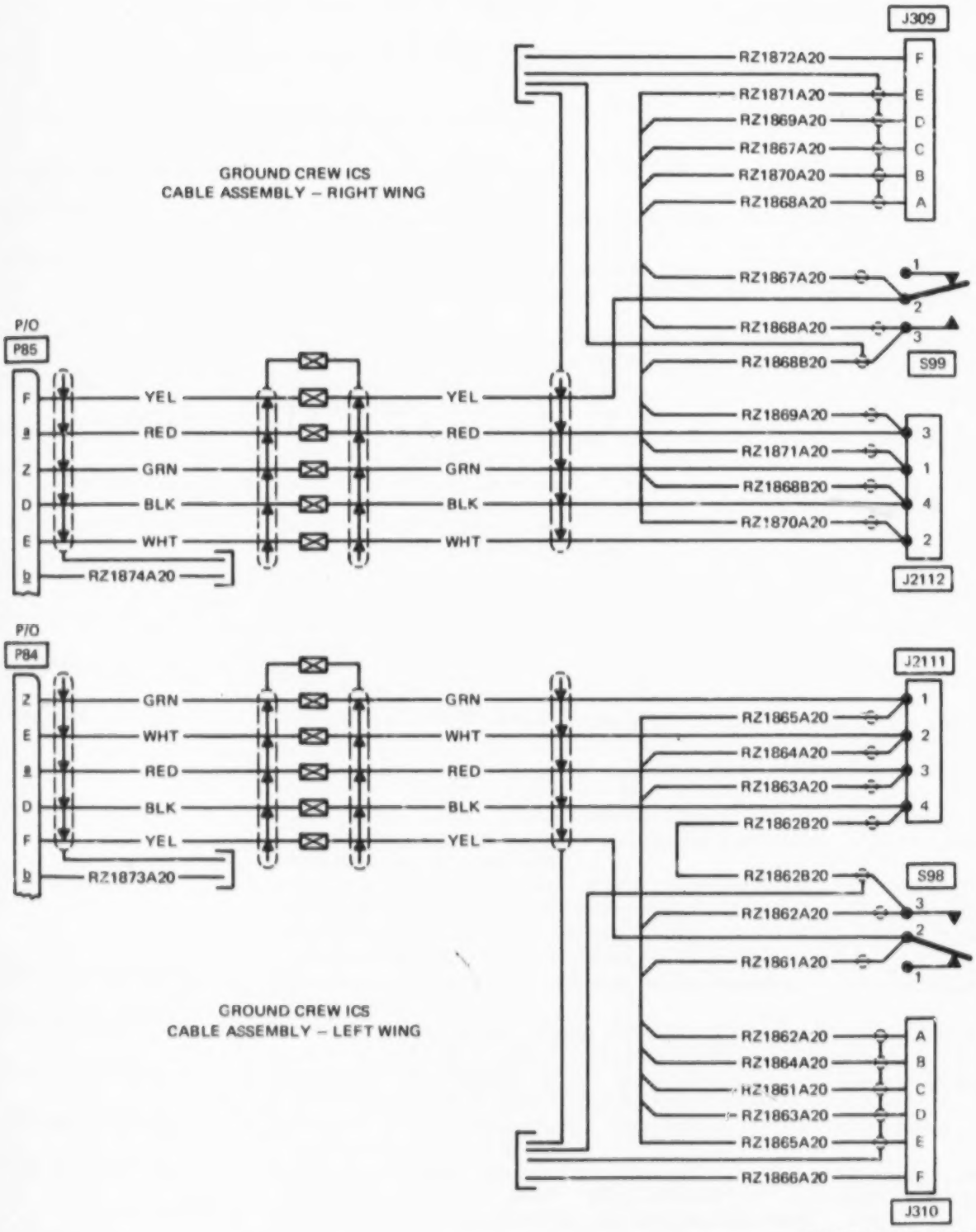


Figure 3-11. Ac power system wiring diagram for aircraft 68-15000 and subsequent



EL 1520-221-20-TM-66

Figure 3–12. Improved ground crew ICS stations schematic, configurations A, B and C, per MWO 55-1520-221-20/5.

APPENDIX A

REFERENCES

The following publications contain information applicable to the AH-1G, AH-1Q, and AH-1S (MOD).

DA Pam 310-4	Index of Technical Publications.
SB 11-573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment.
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters.
TM 11-1520-221-20P	Organizational Maintenance Repair Parts and Sepcial Tools Lists: Electronic Equipment Configuration for Army Helicopter, Attack, AH-1G.
TM 11-5820-518-20	Organizational Maintenance Manual: Radio Set AN/ARC-51X and AN/ARC-51BX.
TM 11-5820-670-12	Operator's and Organizational Maintenance Manual: Radio Set AN/ARC-131 (NSN 5821-00-937-4686).
TM 11-5821-244-12	Operator's and Organizational Maintenance Manual for Radio Set AN/ARC-54 (NSN 5821-00-082-3598).
TM 11-5821-277-20	Organizational Maintenance Manual: Radio Sets AN/ARC-134, AN/ARC-134A, and AN/ARC-134B.
TM 11-5826-225-12	Operator and Organizational Maintenance Manual: Direction Finder Set AN/ARN-83 (NSN 5826-00-912-4415).
TM 11-5831-201-20	Organizational Maintenance Manual: Control, Intercommunication Set C-1611D/AIC and Discriminator, Discrete Signal MD-736/A.
TM 11-5895-217-12	Operator's and Organizational Maintenance Manual (Including Repair Parts List): Transponder Sets AN/APX-44 and AN/APX-44B.
TM 11-5895-490-20	Organizational Maintenance Manual for Receiver-Transmitters, Radio, RT-859/APX-72 (NSN 5895-00-089-7179) and RT-859A/APX-72 (5895-00-160-2198) and Mountings MT-3809/APX-72 (5895-00-063-9498) and MT-3948/APX-72 (5895-00-089-9202).
TM 11-6110-211-15	Organizational, Direct Support, General Support and Depot Maintenance Manual (Including Repair Parts and Special Tool Lists): Amplifier, Electronic Control AM-3209/ASN.
TM 11-6125-220-20	Organizational Maintenance Manual: Motor-Generators PU-543/A (MODIFIED) (NSN 6125-00-062-7483), PU-543A/A (MODIFIED) (6125-00-884-5261), PU-543B/A (6125-00-863-9683), PU-543C/A (6125-00-938-6539), and PU-543D/A (6125-00-938-6539).
TM 11-6125-246-20-1	Organizational Maintenance Manual: Motor-Generator PU-542/A (NSN 6125-00-888-3056).
TM 11-6140-203-14-1	Operator's Organizational, Direct Support and General Support Manual: Aircraft and Nonaircraft Nickel-Cadmium Batteries (General).
TM 11-6140-203-14-2	Operator's, Organizational, Direct Support and General Support Maintenance Manual for Aircraft Nickel-Cadmium Batteries.
TM 11-6605-202-12	Operator's and Organizational Maintenance Manual: Gyromagnetic Compass Set AN/ASN-43.
TM 11-6625-667-12	Operator's and Organizational Maintenance Manual: Test Sets, Transponder AN/APM-123(V)1 (FSN 6625-948-0071), AN/APM-123(V)2 (6625-948-0077) and AN/APM-123(V)3 (6625-948-0076).
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 55-1500-323-25	Organizational, Direct Support, General Support and Depot Maintenance Manual: Installation Practices for Aircraft Electric and Electronic Wiring.
TM 55-1520-221-10	Operator's Manual, Army Model AH-1G/TH-1G Helicopter.

TM 55-1520-221-23-1	Aviation Unit and Aviation Intermediate Maintenance Manual Army Model AH-1G and AH-1Q Helicopters.
TM 55-1520-221-23-2	Aviation Unit and Aviation Intermediate Maintenance Manual Army Model AH-1G and AH-1Q Helicopters.
TM 55-1520-221-23P-1	Aviation Unit and Intermediate Maintenance Repair Parts and Special Tool List (Including Depot Maintenance Repair Parts and Special Tools): Helicopter, Attack AH-1G, Helicopter, Flight Trainer TH-1G, (NSN 1520-00-999-6821) (AH-1G), (1520-00-804-3635) (TH-1G).
TM 55-1520-221-23P-2	Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools): Helicopter, Attack AH-1G; Helicopter, Flight Trainer, TH-1G, (BELL) (NSN 1520-00-999-9621) (AH-1G), (1520-00-804-3635) (TH-1G).
TM 11-1520-221-CL	Operator's and Crewmember's Checklist: Army Model AH-1G/TH-1G Helicopter.
TM 55-1520-221-L	List of Applicable Publications (LOAP) AH-1G/TH-1G Helicopters.
TM 55-1520-221-MTF	Aircraft Maintenance Flight Manual for AH-1G Aircraft.
TM 11-1520-221-20	Organizational Maintenance Manual for Electronic Equipment Configurations, Army Model AH-1G, AH-1Q and AH-1S MOD Helicopters.
TM 55-1520-221-PM	AH-1G Aircraft Phased Maintenance Checklist.
TM 55-1520-234-10	Operator's Manual: Army Model AH-1S (MOD) Helicopter.
TM 55-1520-234-23-1	Avum and Avim Maintenance Manual: AH-1S (MOD).
TM 55-1520-234-23-2	Avum and Avim Maintenance Manual: AH-1S (MOD).
TM 55-1520-234-23P-1	Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools): Helicopter, Attack, AH-1S (MOD) (BELL) (NSN 1520-00-504-9112).
TM 55-1520-234-23P-2	Aviation Unit and Intermediate Maintenance Repair Parts and Special Tools List (Including Depot Maintenance Repair Parts and Special Tools): Helicopter, Attack, AH-1S (MOD) (BELL) (NSN 1520-00-504-9112).
TM 55-1520-234-CL	Operator's and Crewmember's Checklist: Army Model AH-1S (MOD) Helicopter, Pilot's Checklist.
TM 55-1520-234-MTF	Aircraft Maintenance Test Flight Manual for AH-1S Aircraft.
TM 740-90-1	Administrative Storage of Equipment.
TM 750-244-2	Procedures of Destruction of Electronics Materiel to Prevent Enemy Use (Electronics Command).

APPENDIX B

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B—1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for the AH-1G and AH-1Q helicopters. It authorizes categories of maintenance for specific maintenance functions on reparable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

b. Test. To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc. This is accomplished with external test equipment and does not include operation of the equipment and operator type tests using internal meters or indicating devices.

c. Service. To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents, and air. If it is desired that elements, such as painting and lubricating, be defined separately, they may be so listed.

d. Adjust. To rectify to the extent necessary to bring into proper operating range.

e. Align. To adjust two or more components or assemblies of an electrical or mechanical system so that their functions are properly synchronized. This does not include setting the frequency control knob of radio receivers or transmitters to the desired frequency.

f. Calibrate. To determine the corrections to be made in the readings of instruments or test equipment used in precise measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared with the certified standard.

g. Install. To set up for use in an operational environment such as an encampment, site, or vehicle.

h. Replace. To replace unserviceable items with serviceable like items.

i. Repair. To restore an item to serviceable condition through correction of a specified failure or unserviceable condition. This function includes, but is not limited to welding, grinding, riveting, straightening, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

j. Overhaul. Normally, the highest degree of maintenance performed by the Army in order to minimize time work in process is consistent with quality and economy of operation. It consists of that maintenance necessary to restore an item to completely serviceable condition as prescribed by maintenance standards in technical publications for each item of equipment. Overhaul normally does not return an item to like new, zero mileage, or zero hour condition.

k. Rebuild. The highest degree of materiel maintenance. It consists of restoring equipment as nearly as possible to new condition in accordance with original manufacturing standards. Rebuild is performed only when required by operational considerations or other paramount factors and then only at the depot maintenance category. Rebuild reduces to zero the hours or miles the equipment, or component thereof, has been in use.

l. Symbols. The uppercase letter placed in the appropriate column indicates the lowest level at

which that particular maintenance function is to be performed.

B-3. Explanation of Format

a. Column 1, Group Number. Not applicable.

b. Column 2, Functional Group. Column 2 lists the noun names of components, assemblies, subassemblies and modules on which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the maintenance category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to perform that function at higher categories. The codes used represent the various maintenance categories as follows:

Code	*Maintenance category*
C	Operator/Crew
O	Organizational Maintenance
F	Direct Support Maintenance
H	General Support Maintenance
D	Depot Maintenance

d. Column 4, Tools and Test Equipment. Column 4 specifies, by code, those tools and test equipment required to perform the designated function. The numbers appearing in this column refer to specific tools and test equipment which are identified in table I.

e. Column 5, Remarks. Self-explanatory.

B-4. Explanation of Format of Table I, Tool and Test Equipment Requirements

The columns in Table I, Tool and Test Equipment Requirements are as follows:

a. Tools and Equipment. The numbers in this column coincide with the numbers used in the tools and equipment column of the Maintenance Allocation Chart. The numbers indicate the applicable tool for the maintenance function.

b. Maintenance Category. The codes in this column indicate the maintenance category normally allocated the facility.

c. Nomenclature. This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

d. Federal Stock Number. This column lists the Federal stock number of the specific tool or test equipment.

e. Tool Number. Not used.

[next page is B-4]

SECTION II. MAINTENANCE ALLOCATION CHART

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	ELECTRICAL SYSTEM (Helicopters 66-15249 thru 67-15869)													
	MOTOR GENERATOR PU-542(A)/A (MAIN) (AH-1G)	O												Perform visual inspection.
			O										1,3	Perform operational and continuity tests.
				O										
									O				1,3	Refer to MAC, TM 11-6125-246-20-1 for higher category maintenance.
	INVERTER, STATIC (STANDBY) P/N 209-075-213-1	O												
			O										1,3	Perform operational and continuity tests.
				O										
					F								2,4	Perform voltage adjustments.
									O				1,3	
										D	D			
	BATTERY BB-433/A	O												Perform operational tests.
			O										1,9	Refer to MAC, TM 11-6140-203-15-2 for higher category maintenance.
									O					
	ELECTRICAL SYSTEM (HELICOPTERS 68-15000 THRU ALL SUBSEQUENT)													
	MOTOR GENERATOR PU-543(*)/A (MAIN) (AH-1G)	O												
			O										1,3	Perform operational and continuity tests.
				O										
									O				1,3	Refer to MAC, TM 11-6125-220-12 for higher category maintenance.
	INVERTER, STATIC 209-075-572 (MAIN) (AH-1Q)	O												
			O										1, 3	Perform operational and continuity tests.
					O	F							2, 4	Perform voltage adjustments.
										O			1, 3	
											D	D		

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MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
	INVERTER, STATIC (STANDBY) P/N 209-075-213-3	O												
			O										1,3	Perform operational and continuity tests.
				O										
					F								2,4	Perform voltage adjustments.
									O				1,3	
	BATTERY BB-649/A	O												
			O											Perform operational tests.
									O				1,9	Refer to MAC, TM 11-6140-205-12 for higher category maintenance.
	FLIGHT CONTROL SYSTEM													
	STABILITY CONTROL AUGMENTATION SYSTEM (SCAS) MODEL 570A	O												
			F										2,3,4,5,6,7,8	Perform visual inspection. Isolate the failure to one of the following units: Sensor Amplifier Unit Control Panel. Pylon Compensation Unit. Switches, wiring, junction boxes, etc.
					F								2,3,4,5,6,7,8	Make adjustments to the control channel assemblies.
										F			2,3,4,5,6,7,8	Repair by replacement of one of the following units: Sensor Amplifier Unit Control Panel. Pylon Compensation unit. Switches, wiring, junction boxes, etc.

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
1.	SENSOR AMPLIFIER UNIT P/N 570-074-010-( )	O	F										2,3,4,5,6,7,8	Isolate a failure to one of the following components: AC Power Module. Pulse Generator Module. Three Axis Gyro Assy. Pitch Control Channel Assembly. Roll Control Channel Assembly. Yaw Control Channel Assembly.
				O										
									O				1,3	
										F			2,3,4,5,6,7,8	Repair by replacement of one of the following components: AC Power Module. Pulse Generator Module. Three Axis Gyro Assy. Pitch Control Channel Assembly. Roll Control Channel Assembly. Yaw Control Channel Assembly.
1A1	AC POWER MODULE	F												Perform visual inspection.
			F										2,3,4,5,6,7,8	
									F				2,3,4,5,6,7,8	
1A2	PULSE GENERATOR MODULE	F												
			F										2,3,4,5,6,7,8	
									F				2,3,4,5,6,7,8	
1A3	THREE AXIS GYRO ASSEMBLY	F												
			F										2,3,4,5,6,7,8	Isolate a failure to one of the following components: Pitch Gyroscope. Roll Gyroscope. Yaw Gyroscope.
									F				2,3	
										F			2,3,4,5,6,7,8	Repair by replacement of one of the following components: Pitch Gyroscope. Roll Gyroscope. Yaw Gyroscope.

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
1A3MP1	PITCH GYROSCOPE	F												
			F										2,3,4,5,6,7,8	
									F					
1A3MP2	ROLL GYROSCOPE									D	D		2,3,4,5,6,7,8	See SB 11-497.
		F												
			F										2,3,4,5,6,7,8	
									F					
1A3MP3	YAW GYROSCOPE									D	D		2,3,4,5,6,7,8	See SB 11-497
		F												
			F										2,3,4,5,6,7,8	
									F					
1A4	PITCH CONTROL GYRO ASSY									D	D		2,3,4,5,6,7,8	See SB 11-497.
		F												
			F										2,3,4,5,6,7,8	Isolate a failure to the BITE Module, Valve Driver Module, and to a discrite component.
									F					
										F			2,3 2,3,4,5,6,7,8	Repair by replacement of the BITE Module, Valve Driver Module, or discrete components.
1A5	ROLL CONTROL CHANNEL ASSY	F												
			F										2,3,4,5,6,7,8	Isolate a failure to a discrete component, BITE Module or Valve Driver Module.
									F					
										F			2,3 2,3,4,5,6,7,8	Repair by replacement of discrete components, BITE Module, or Valve Driver Module.

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
	AH-1G (continued)	INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
1A6	YAW CONTROL CHANNEL ASSY	F	F										2,3,4,5,6,7,8	Isolate a failure to the BITE Module, Valve Driver Module, or to a discrete component.
									F				2,3	
										F			2,3,4,5,6,7,8	Repair by replacement of the BITE Module, Valve Driver Module, or discrete components.
2	CONTROL PANEL P/N 570-074-060-( )	O												Perform visual inspection.
			F										2,3,4,5,6,7,8	Isolate a failure to a discrete component or switches.
				O										
									O					
										F			2,3,4,5,6,7,8	Repair by replacement of discrete components or switches.
3	PYLON COMPENSATION UNIT P/N 570-074-131-( )	O												Perform visual inspection.
			F										2,3,4,5,6,7,8	Isolate a failure to a discrete component.
				O										
									O				1,3	
										F			2,3,4,5,6,7,8	Repair by replacement of discrete components.
	ATTITUDE INDICATOR SYSTEM (INDICATORS ARE LOGISTIC RESPONSIBILITY OF USAAVSCOM)													
	GYROSCOPE VERTICAL DISPLACEMENT CN-1314/A	O												Perform visual inspection.
			O										1,3	
									O				1,3	
										D	D			See SB 11-497.

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
	GYROSCOPE, RATE SWITCHING MC-1	O												
			O										1,3	
									O				1,3	
										D	D			See SB 11-497.
	GYROMAGNETIC COMPASS SYSTEM													
	GYROMAGNETIC COMPASS SET AN/ASN-43	O												
			F											Perform visual inspection.
													2,3	Isolate a failure to a major component.
				O										
										O			1,3	Repair by replacement of one of the following components: Transmitter, Induction Compass T-611/ASN. Compensator, Magnetic Flux CN-405/ASN. Directional Gyroscope CN-998/ASN-43.
	TRANSMITTER, INDUCTION COMPASS T-611/ASN								O				1,2	Refer to MAC, TM 11-6605-202-12 for higher category maintenance.
	COMPENSATOR, MAGNETIC FLUX CN-405/ASN								O				1,3	Refer to MAC, TM 11-6605-202-12 for higher category maintenance.
	DIRECTIONAL GYROSCOPE CN-998/ASN-43								O				1,3	Refer to MAC, TM 11-6605-202-12 for higher category maintenance.
	INDICATOR, RADIO-MAGNETIC COMPASS ID-998	O												
			O										1,3	
									O				1,3	
										D				

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
	INDICATOR, COURSE ID-250/ARN	O												
			O										1,3	
									O					Refer to TM 11-5826-211-50 for higher category maintenance.
	AMPLIFIER, ELECTRONIC CONTROL AM-3209/ASN	O												
			F										2,3	
									O				1,3	Refer to MAC, TM 11-6110-211-15 for higher category maintenance.
	AUTOMATIC DIRECTION FINDING (ADF)													
	DIRECTION FINDER SET AN/ARN-83	O												
			O										1,3	Isolate a failure to one of the following units: Radio Receiver R-1391/ARN-83 Mounting MT-3605/ARN-83 Direction Finder, Control C-6899/ARN-83; Antenna, Loop Antenna, Sense, Quadrantal Error Corrector
			F										2,4	Isolate a failure to switches, wiring, junction boxes, etc.
				O										
										O			1,3	Repair by replacement of one of the following units: Radio Receiver R-1391/ARN-83 Mounting MT-3605/ARN-83 Direction Finder Control C-6899/ARN-83; Antenna, Loop Antenna, Sense, Quadrantal Error Corrector
										F			2,4	Repair by replacement of switches, wiring, junction boxes, etc.

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
	RADIO RECEIVER R-1391/ARN-83	O		O					O				1,3	Refer to MAC, TM 11-5826-225-12 for higher category maintenance.
	MOUNTING MT-3605/ARN-83	O		O					O				1,3	Refer to MAC, TM 11-5826-225-12 for higher category maintenance.
	DIRECTION FINDER CONTROL C-6899/ARN-83	O		O					O				1,3	Refer to MAC, TM 11-5826-225-12 for higher category maintenance.
	ANTENNA, LOOP TYPE 137A-7	O	F	O					O	F			2,4 1,3 2,4	Determine if repairable or throwaway.
	ANTENNA, SENSE P/N 209-030-133	O	F						O	F			2,4 1,3 2,4	Determine if repairable or throwaway.
	QUADRENTAL ERROR CORRECTOR P/N 777-1579-00-( )	O		O					O				1,3	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
	AH-1G (continued)	INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	COMMUNICATIONS SECURTIY SYSTEM													
	COMMUNICATIONS SECURITY EQUIPMENT TSEC/KY-28	O											1,3	
			O	O					O				1,3	Logistical responsibility of Army Security Agency.
	CONTROL INDICATOR C-8157/ARC	O		O					O				1,3	Refer to MAC, TM 11-5821-244-12 for higher category maintenance.
	MOUNTING MT-3802/ARC	O		O					O	F			1,3 2,3	
	DISCRETE SIGNAL DISCRIMINATOR MD-736/A	O		O					O	F			1,3 2,3	Refer to MAC, TM 11-5831-201-20 for higher level maintenance.
	SECURE MODE INDICATOR	O		O					O				1,3	

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MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
	IFF SYSTEM													
	TRANSPONDER SET AN/APX-72	0												
			0										1,3	Perform visual inspection. Isolate a failure to one of the following units: Receiver-Transmitter, Radar RT-859/APX-72; Mounting MT-3809/APX-72, Control, Transponder Set C-6280A(P)/APX Antenna AT-884/APX-44
				0										
										0			1,3	Repair by replacement of one of the following units: Receiver-Transmitter, Radar RT-859/APX-72, Mounting MT-3809/APX-72; Control, Transponder Set C-6280A(P)/APX, Antenna AT-884/APX-44
	RECEIVER TRANSMITTER, RADAR RT-859/APX-72	0												
				0										
									0				1,3	Refer to MAC, TM 11-5895-490-20 for higher category maintenance.
	MOUNTING MT-3809/APX-72	0												
				0										
									F				2	
	CONTROL, TRANSPONDER SET C-6280A(P)/APX	0												
				0										
									0				1,3	Refer to MAC, TM 11-5895-490-20 for higher category maintenance.

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
	ANTENNA AT-884/APX-44	0		0					0				2	
	IFF SYSTEM													
	TRANSPONDER SET AN/APX-44 (REPLACED BY AN/APX-72 IN LATER CONFIGURATIONS)	0	0										1,3	Perform visual inspection. Isolate a failure to one of the following units: Receiver-Transmitter, Radar RT-494/APX-44, Control, Transponder Set C-2714/APX-44 Mounting MT-2100/APX-44 Antenna AT-884/APX-44
				0						0			1,3	Repair by replacement of one of the following units: Receiver-Transmitter, Radar RT-494/APX-44; Control, Transponder Set C-2714/APX-44 Mounting MT-2100/APX-44 Antenna AT-884/APX-44
	RECEIVER TRANSMITTER, RADAR RT-494/APX-44	0		0					0				1,3	Refer to MAC, TM 11-5895-217-12 for higher category maintenance.
	CONTROL, TRANSPONDER SET C-2714/APX-44	0		0					0				1,3	Refer to MAC, TM 11-5895-217-12 for higher category maintenance.
	MOUNTING MT-2100/APX-44	0		0					F				1,3	

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MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
	AH-1G (continued)	INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	ANTENNA AT-884/APX-44	0		0					0				2	
	FM LIASION													
	RADIO SET AN/ARC-54	0	0										1,3	Perform visual inspection. Isolate a failure to one of the following units: Receiver-Transmitter, RT-348/ARC-54; Mounting MT-1535/ARC-54; Control, Radio Set C-3835/ARC-54 Indicator ID-48/ARN; Antenna, Communication AS-2285/ARC; Antenna homing
			F										2,3	Isolate a failure to switches, wiring, junction boxes, etc.
				0						0			1,3	Repair by replacement of one of the following units: Receiver-Transmitter, Radio RT-348/ARC-54, Mounting MT-1535/ARC-54; Control, Radio Set C-3835/ARC-54, Indicator ID-48/ARN; Antenna Communication AS-2285/ARC Antenna homing
										F			1,3	Repair by replacement of switches, wiring, junction boxes, etc.
	RECEIVER-TRANSMITTER, RADIO RT-348/ARC-54	0		0					0				1,3	Refer to MAC, TM 11-5821-244-12 for higher category maintenance.

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
	AH-1G (continued)	INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	MOUNTING MT-1535/ARC-54	0		0					F				2	Refer to MAC, TM 11-5821-244-12 for higher category maintenance.
	CONTROL, RADIO SET C-3835/ARC-54	0		0					0				1,3	Refer to MAC, TM 11-5821-244-12 for higher category maintenance.
	INDICATOR ID-48/ARN	0		0					0				1,3	Refer to TM 11-5840-270-50 for higher category maintenance.
	ANTENNA, COMMUNICATION AS-2285/ARC	0		0					0				2	
	ANTENNA HOMING P/N 209-075-292-1	0		0						0			2	
	RADIO SET AN/ARC-131 (HELICOPTERS 68-15000 AND SUBSEQUENT)	0	0										1,3	Isolate a failure to one of the following units: Receiver-Transmitter, Radio RT-823/ARC-131, Mounting MT-3664/ARC-131, Control, Radio Set C-7088/ARC-131; Antenna, Communication AS-2285/ARC; Antenna homing
			F										2,3	Isolate a failure to switches, wiring, junction boxes, etc.

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
	RADIO SET AN/ARC-131 (HELICOPTERS 68-15000 AND SUBSEQUENT) (Continued)			O						O			1,3	Repair by replacement of one of the following units: Receiver-Transmitter, Radio RT-823/ARC-131; Mounting MT-3664/ARC-131; Control, Radio Set C-7088/ARC-131; Antenna, Communications AS-2285/ARC; Antenna homing
										F			2,3	Repair by replacement of switches, wiring, junction boxes, etc.

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
	RECEIVER-TRANSMITTER, RADIO RT-823/ARC-131	0		0					0				1,3	Refer to MAC, TM 11-5820-670-12 for category level maintenance.
	MOUNTING MT-3664/ARC-131	0		0					F				2	Refer to MAC, TM 11-5820-670-12 for higher category maintenance.
	CONTROL, RADIO SET C-7088/ARC-131	0		0					0				1,3	Refer to MAC, TM 11-5820-670-12 for higher category maintenance.
	ANTENNA, COMMUNICATION AS-2285/ARC	0		0					0				2	
	ANTENNA HOMING	0		0					0				2	
	UHF COMMAND													

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MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
	RADIO SET AN/ARC-51BX	O												
			O										1,3	Isolate a failure to one of the following units: Receiver Transmitter, Radio RT-742(*)/ARC-51BX, Mounting MT-2653/ARC; Control, Radio Set C-6287/ARC-51BX Cooler, Air, Electronic Equipment HD-615/ARC-51BX Indicator, Standing Wave Ratio ID-1003/ARC Antenna AT-1108/ARC
			F										2,4	Isolate a failure to switches wiring, junction boxes, etc.
				O										
										O			1,3	Repair by replacement of one of the following units: Receiver Transmitter, Radio RT-742(*)/ARC-51BX; Mounting MT-2653/ARC; Control, Radio Set C-6287/ARC-51BX; Cooler, Air, Electronic Equipment HD-615/ARC-51BX; Indicator, Standing Wave Ratio ID-1003/ARC; Antenna AT-1108/ARC
										F			2,4	Repair by replacement of switches, wiring junction boxes, etc.

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
	RECEIVER-TRANSMITTER, RADIO RT-742(*)/ARC-51BX	0		0					0				1,3	Refer to MAC, TM 11-5820-518-20 for higher category maintenance.
	MOUNTING MT-2653/ARC	0		0					F				2	Refer to MAC, TM 11-5820-518-20 for higher category maintenance.
	COOLER, AIR, ELECTRONIC EQUIPMENT HD-615/ARC-51BX	0		0					0				1,3	
	INDICATOR, STANDING WAVE RATIO ID-1003/ARC	0		0					0				1,3	
	ANTENNA AT-1108/ARC	0		0					0				2	
	VHF COMMAND													

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
	RADIO SET AN/ARC-134	O												
			O										1,3	Perform visual inspection. Isolate a failure to one of the following units: Receiver-Transmitter, Radio RT-857/ARC-134; Mounting MT-3791/ARC-134; Control, Radio Set C-7197/ARC-134, Antenna AT-1108/ARC
			F										2,3	Isolate a failure to switches, wiring, junction boxes, etc.
				O										
									O				1,3	Repair by replacement of one of the following units:
										F			2,3	Repair by replacement of switches, wiring, junction boxes, etc.
	RECEIVER-TRANSMITTER, RADIO RT-857/ARC-134	O												
				O										
									O				1,3	Refer to MAC, TM 11-5821-277-25-1 for higher category maintenance.
	MOUNTING MT-3791/ARC-134	O												
				O										
									F				2,4	Refer to MAC, TM 11-5821-277-25-1 for higher category maintenance.
	CONTROL, RADIO SET C-7197/ARC-134	O												
				O										
									O				1,3	Refer to MAC, TM 11-5821-277-25-1 for higher category maintenance.

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
	AH-1G (continued)	INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	ANTENNA AT-1108/ARC	0		0					0					
	INTERCOMMUNICATIONS AND AUDIO													
	CONTROL INTERCOMMUNICATIONS SET C-1611(*)/AIC	0	F	0					0				2,4 1,3	Refer to MAC, TM 11-5831-201-15 for higher category maintenance.
	MICROPHONE SWITCH (CYCLIC)	0	F						0				2,4 1,3	
	MICROPHONE SWITCH SA-47A/AIC	0	F						0				2,4 1,3	
	IMPEDANCE MATCHING NETWORK P/N 209-075-235	0	F						0	F			2,4 1,3 2,4	
	PRINTED CIRCUIT BOARD P/N 209-075-246	0	F						0	F			2,4 1,3 2,4	
	INSTALLATION ITEMS													
	CABLE HARNESSES	0	0	0					0	F			1,3 1,3 2,4	

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AH-1G (continued)													
	JUNCTION BOX CONNECTORS													
		O	O	O									1,3	
	PLUGS								F				2,3	
		O	O	O									1,3	
	SWITCHES								F				2,3	
		O	O	O									1,3	
	CABLE ASSEMBLIES, RF								F				2,3	
		O	O	O									1,3	
	COUPLERS								F	F			2,4 2,4	
		O	O	O									1,3	
	KIT, CONNECTORS FSN: 5935-695-4914									F			2,3	
		O	O	O									1,3	
										F			2,3	
	PROXIMITY WARNING FACILITY YG-1054	O	O						O					Local maintenance support

TABLE I. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
		AH-1G (continued)		
1	O	TOOL KIT, ELECTRONIC EQUIPMENT TK-101/G	5180-064-5178	
2	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	
3	O,F,H,D	MULTIMETER AN/UEM-223	6625-999-7465	
4	F,H,D	MULTIMETER ME-26B/U	6625-646-9409	
5	F,H,D	TEST SET, ELECTRONIC SYSTEM AN/ASM-338	6625-878-7990	
6	F,H,D	VOLTMETER, ELECTRONIC	6625-660-0142	
7	F,H,D	OSCILLSOCOPE AN/USM-281	6625-053-3112	
8	F,H,D	GENERATOR, SIGNAL AN/URM-127	6625-783-5965	
9	O,F,H,D	TOOL KIT, BATTERY SERVICE	5180-542-5892	

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GLOSSARY

Section I. ABBREVIATIONS

ac	alernating current
adf	automatic direction finder
dc	direct current
df	direction finding
FM	frequency modulation
ics	intercommunication system

Section II. DEFINITIONS OF UNUSUAL TERMS

aft—At, near, or toward the rear of an aircraft (helicopter); also the rear section of an aircraft (helicopter).

Airframe—Structural components of an aircraft (helicopter) including the framework and the skin.

Attitude—The aspect that an aircraft (helicopter) presents at any given moment, as determined by its inclinations about its three axes.

Automatic direction finder—Radio compass facility which permits automatic indication of the direction of the station two which it is tuned.

Basic signal electronic equipment—Equipment for which the Electronics Command has logistic and maintenance responsibility and for which there are Department of the Army publications covering troubleshooting, testing, aligning, and repairing of the equipment through replacing maintenance parts and repairing specific maintenance parts. These equipments are used without modification in more than one aircraft, and are Government-furnished to the aircraft manufacturer for installation.

Bearing—Position of an aircraft (helicopter) with respect to true or magnetic north. Measured in degrees, 0° to 360°.

Bus—A conductor or group of conductors which serve as a common connection between two or more circuits.

Compass rose—A graduated circle marked in degrees and/or directions for calibration of aircraft (helicopter) magnetic compasses.

Configuration—A group of various equipments interconnected and interrelated to provide a large system that has numerous functions and capabilities.

Course—A planned route or direction of flight referenced to points on the earth.

Flux valve—A direction-sensing element activated by the earth's magnetic field.

Fore—At, near, or toward the front of the aircraft (helicopter); also the front section of an aircraft (helicopter).

Heading—The relative direction in which the aircraft (helicopter) is pointed.

Homing—Navigation toward a point.

Hot mike—Microphone always on (no-push-to-talk function).

Marker beacon—Radio beacon placed along a runway to indicate the position of the aircraft (helicopter).

Null—Zero signal indication.

Omnidirectional—In all directions.

Safety wire—Steel wire tied through holes in equipment mounting hardware to keep the equipment fastenings securely mounted, regardless of vibrations.

Sense antenna—An antenna used to resolve a 180° ambiguity in a directional antenna.

Slaved—Synchronized with, forced to follow, or duplicate an action.

To-from meter—Indicates the direction an aircraft (helicopter) is heading in relation to a vor station.

Tone localizer—A transmitted signal with tones that identify the aircraft's (helicopter's) direction from the runway during final approach or landing.

Visual-aural range—Radio range that transmits information for visual and aural interpretation in the aircraft (helicopter). Information enables the pilot to follow a prescribed course.

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Official:

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MAPS

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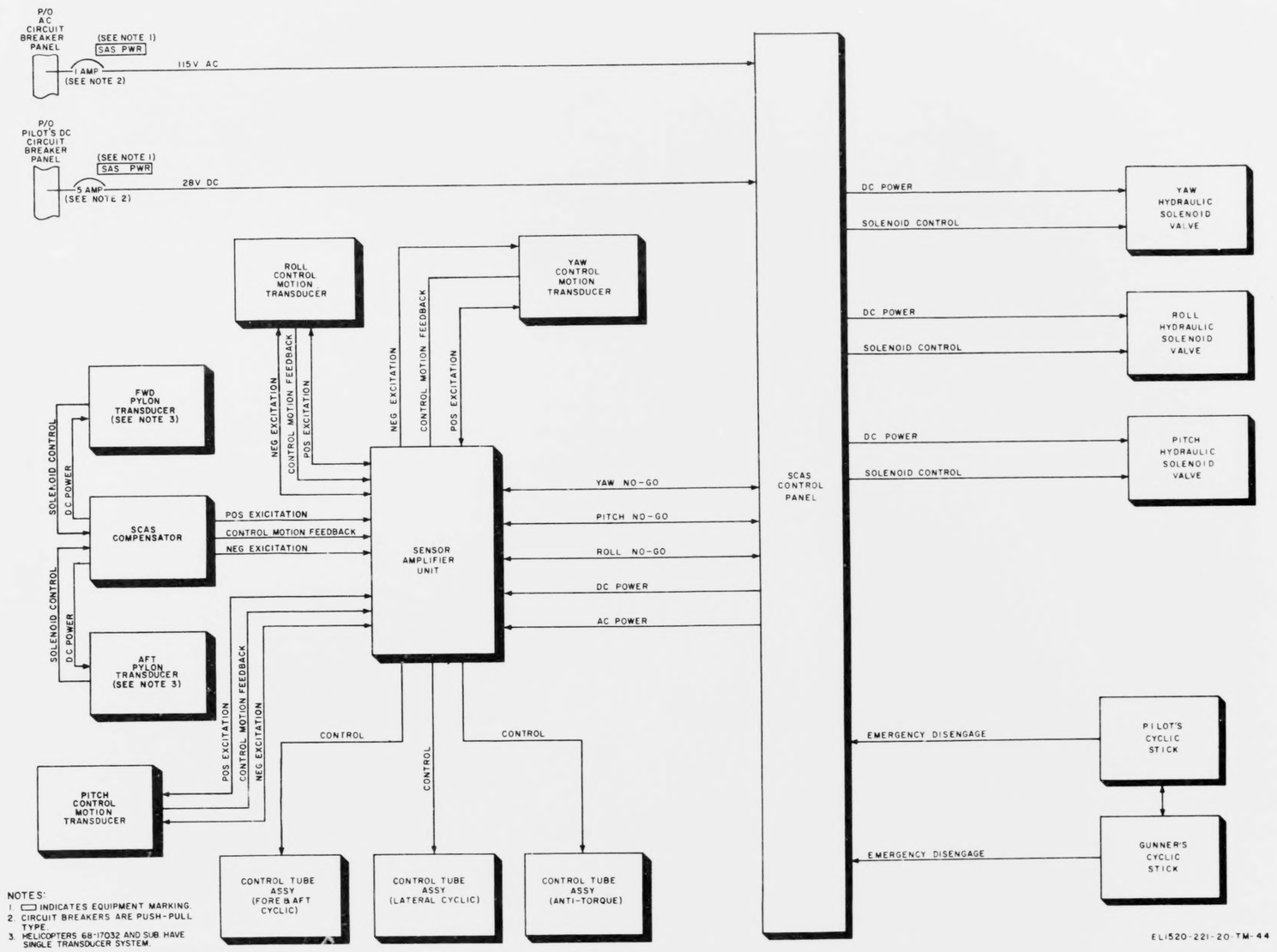

FO–1. Stability and control augmentation (SCAS) block diagram.

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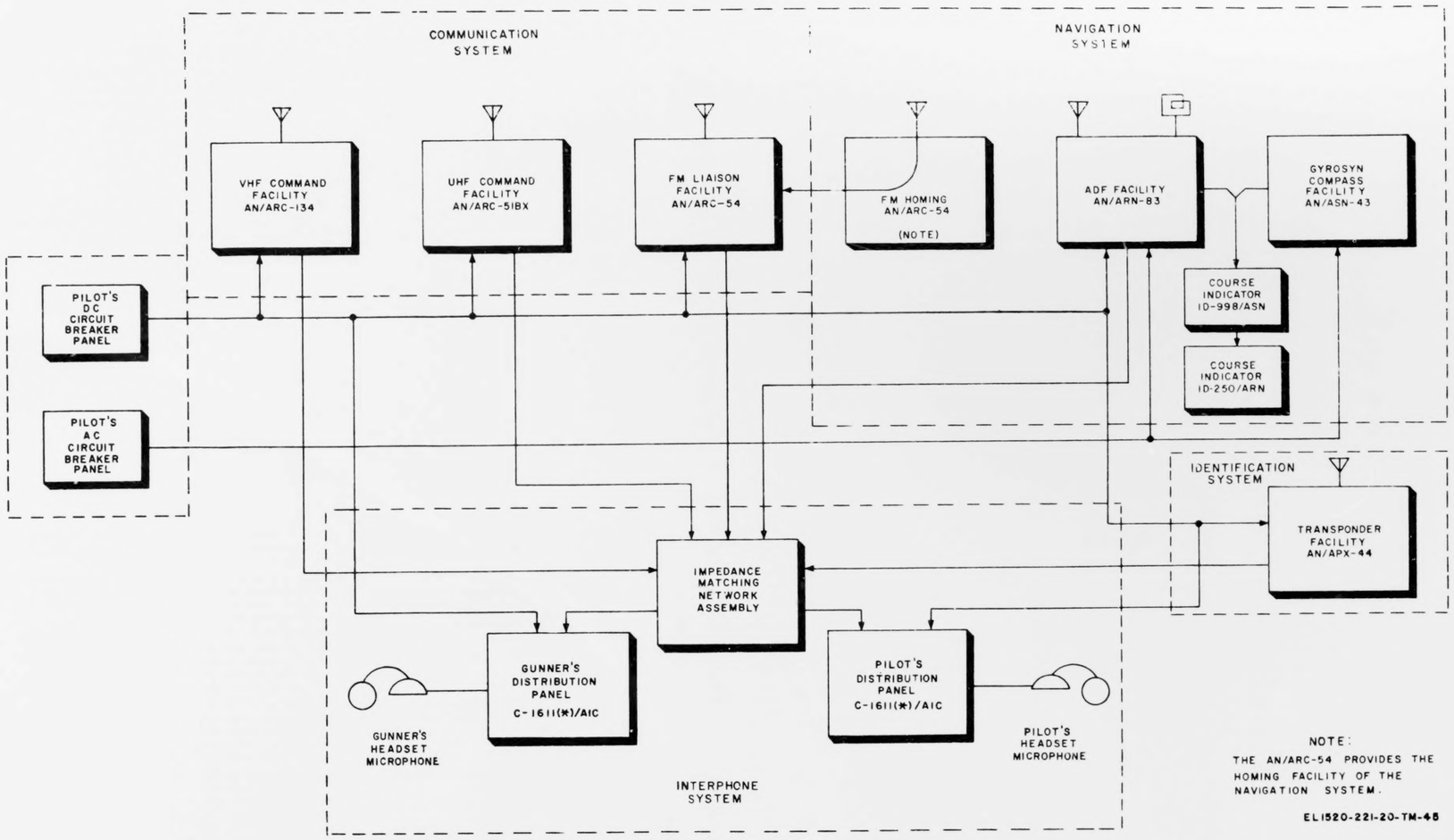
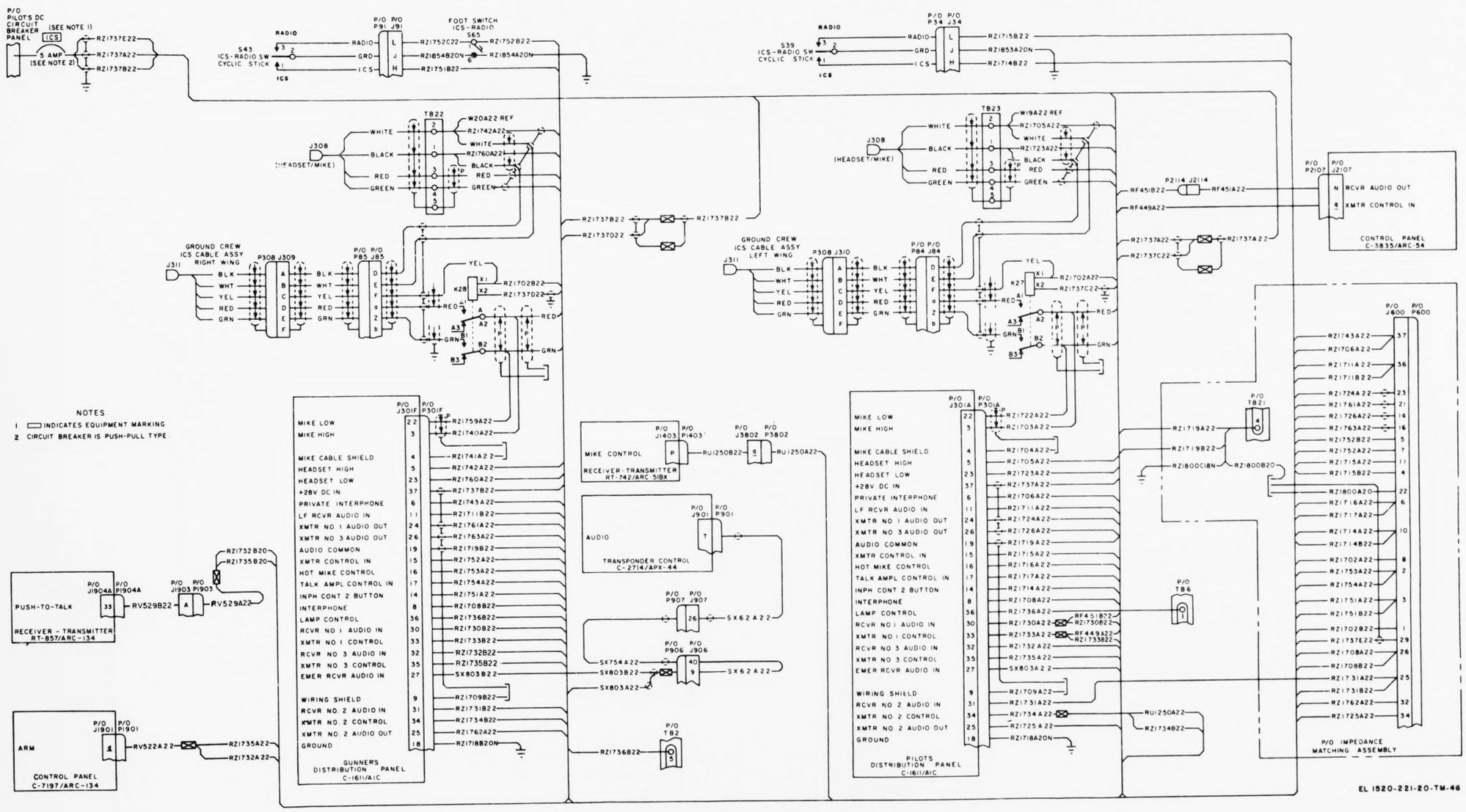
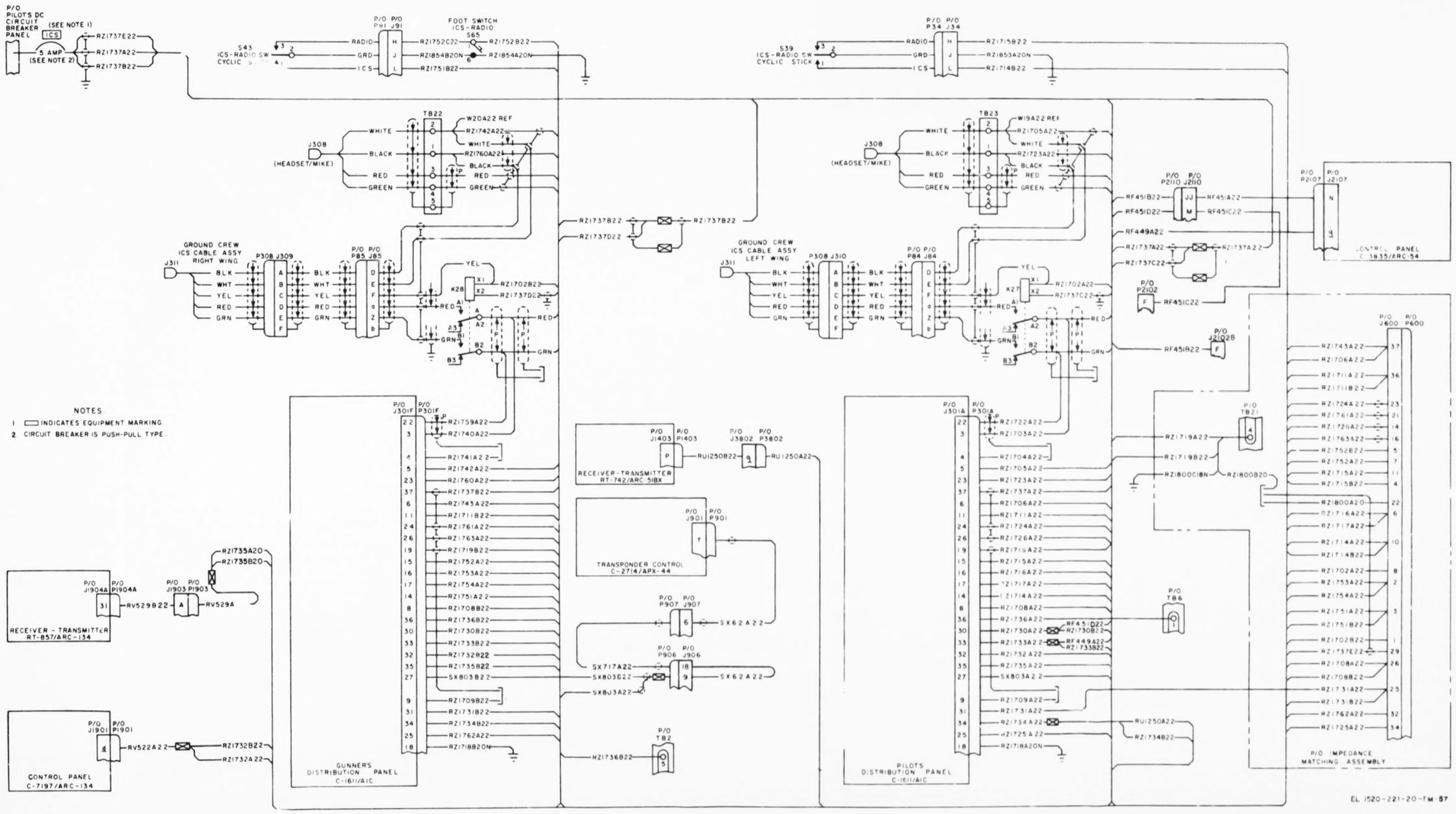


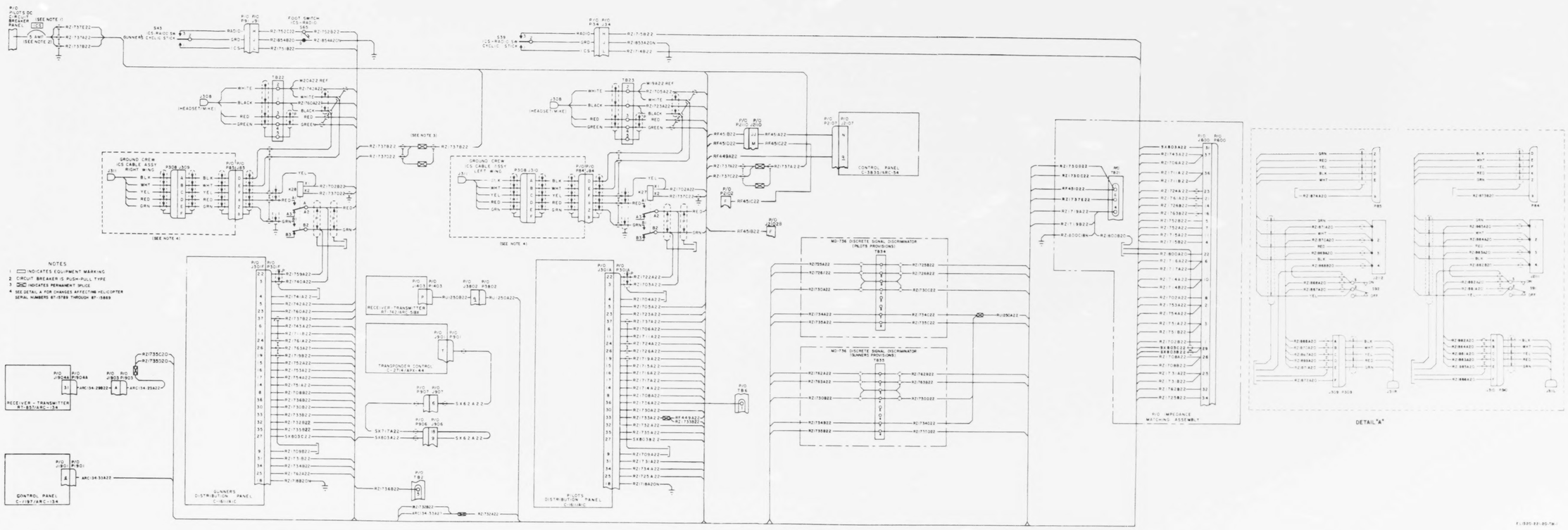
FO-2. Configuration block diagram.



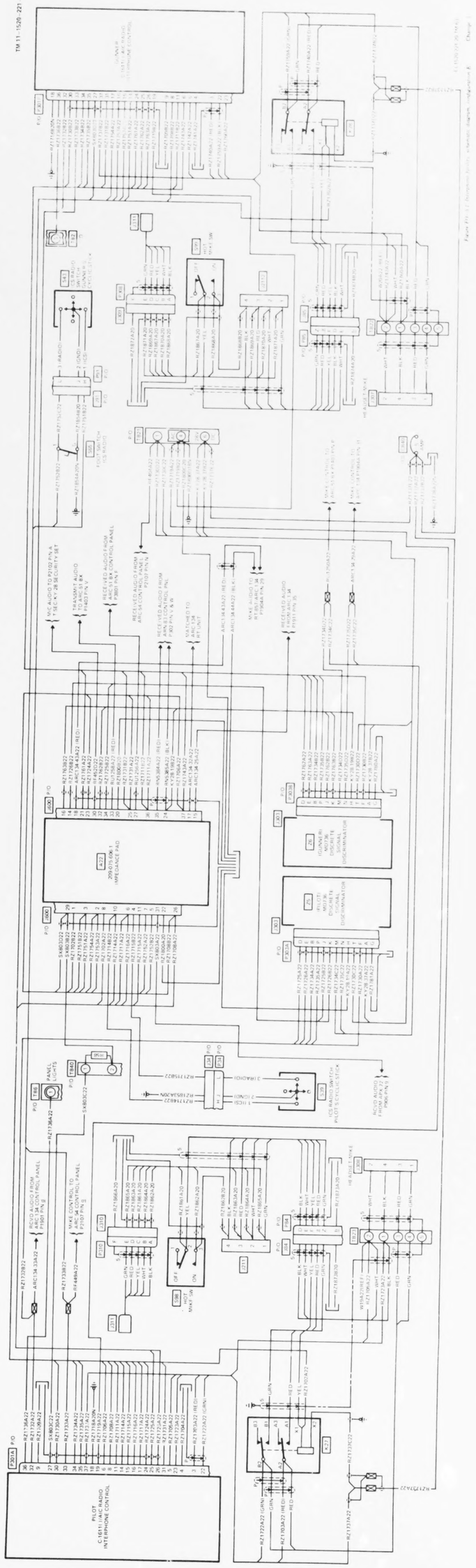
FO-3. Interphone facility schematic, configurations A and B.



FO-4. Interphone facility schematic, configuration C.


NOTES
1. INDICATES EQUIPMENT MARKING
2. CIRCUIT BREAKER IS PUSH-PULL TYPE
3. INDICATES PERMANENT SPLICE
4. SEE DETAIL A FOR CHANGES AFFECTING HELICOPTER SERIAL NUMBERS 67-15789 THROUGH 67-15889
GUNNERS DISTRIBUTION PANEL C-1611/AIC
PILOTS DISTRIBUTION PANEL C-1611/AIC
CONTROL PANEL C-1197/ARC-134
RECEIVER-TRANSMITTER RT-857/ARC-134
RECEIVER-TRANSMITTER RT-742/ARC-134
TRANSPONDER CONTROL C-2714/APX-44
CONTROL PANEL C-3835/ARC-54
MD-756 DISCRETE SIGNAL DISCRIMINATOR (PILOTS PROVISIONS) A34
MD-756 DISCRETE SIGNAL DISCRIMINATOR (GUNNERS PROVISIONS) A35
RF MISMATCH ASSEMBLY
DETAIL "A"

FO-5. Interphone facility schematic, configuration D.


PILOT
C-1611/ARC-54(V)
INTERPHONE CONTROL
P/O
J-32
2090-1106-1
IMPEDANCE PAD
P/O
J-33
(GUNNER)
AUDIO
DISCRETE
SIGNAL
DISCRIMINATOR
P/O
J-34
PILOT
AUDIO
DISCRETE
SIGNAL
DISCRIMINATOR
P/O
J-35
P/O
J-36
P/O
J-37
P/O
J-38
P/O
J-39
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J-40
P/O
J-41
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J-54
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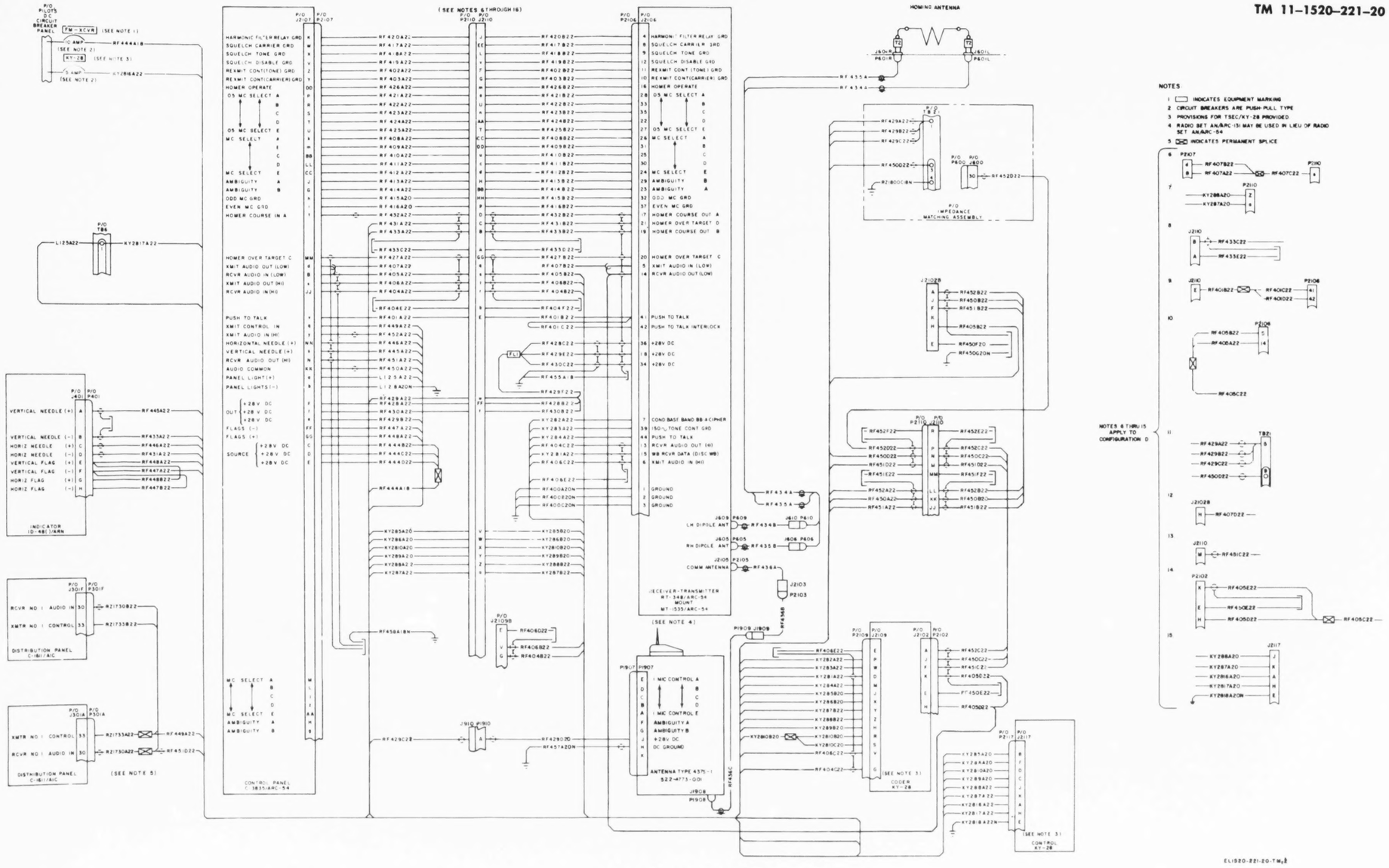
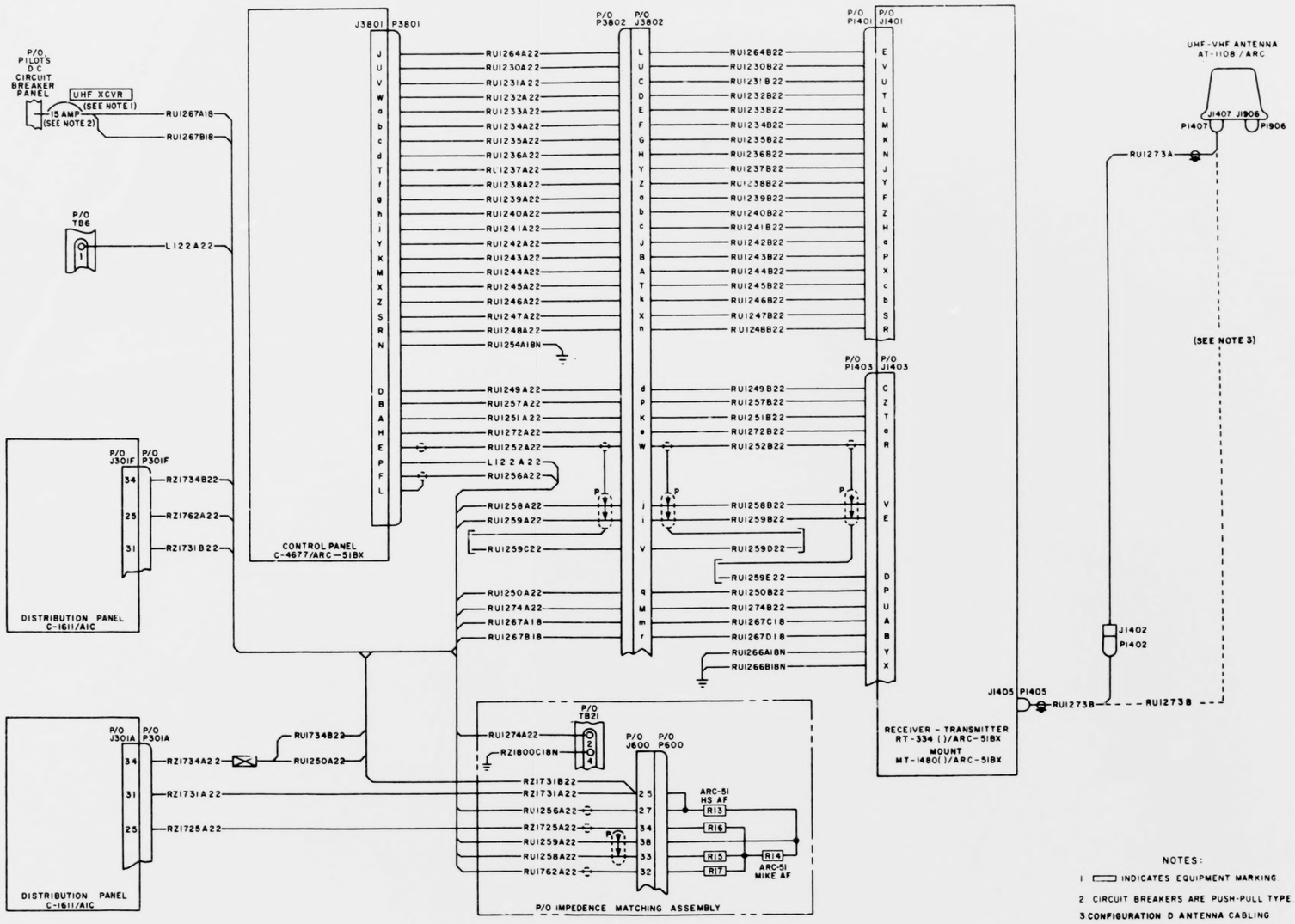

(SEE NOTES 6 THROUGH 16)
HOMING ANTENNA
NOTES
1 INDICATES EQUIPMENT MARKING
2 CIRCUIT BREAKERS ARE PUSH-PULL TYPE
3 PROVISIONS FOR TSEC/KY-28 PROVIDED
4 RADIO SET AN/ARC-154 MAY BE USED IN LIEU OF RADIO SET AN/ARC-54
5 INDICATES PERMANENT SPLICE
NOTES 6 THRU 15 APPLY TO CONFIGURATION D
P/O PILOTS D.C. CIRCUIT BREAKER PANEL
(SEE NOTE 1)
(SEE NOTE 2)
(SEE NOTE 5)
P/O TB5
P/O J401 P/O P401
INDICATOR ID-481/ARN
P/O J301F P/O P301F
DISTRIBUTION PANEL C-1611/AIC
P/O J301A P/O P301A
(SEE NOTE 5)
P/O J107 P/O P107
CONTROL PANEL C-3835/ARC-54
P/O P210 P/O J210
P/O P210B J210B
P/O P210A J210A
P/O P210 J210
P/O P107 J107
P/O P106 J106
P/O J109 P/O P109
P/O J102 P/O P102
P/O P217 J217
RECEIVER-TRANSMITTER RT-348/ARC-54 MOUNT MT-1535/ARC-54
(SEE NOTE 4)
ANTENNA TYPE 457E-1 522-4773-001
CODER KY-28
CONTROL KY-28
P/O IMPEDANCE MATCHING ASSEMBLY
LH DIPOLE ANT
RH DIPOLE ANT
COMM ANTENNA
HARMONIC FILTER RELAY GRD
SQUELCH CARRIER GRD
SQUELCH TONE GRD
SQUELCH DISABLE GRD
REXMIT CONT(TONE) GRD
REXMIT CONT(CARRIER) GRD
HOMER OPERATE
05 MC SELECT A
05 MC SELECT E
MC SELECT
AMBIGUITY
ODD MC GRD
EVEN MC GRD
HOMER COURSE IN A
HOMER OVER TARGET C
XMIT AUDIO OUT (LOW)
RCVR AUDIO IN (LOW)
XMIT AUDIO OUT (HI)
RCVR AUDIO IN (HI)
PUSH TO TALK
XMIT CONTROL IN
XMIT AUDIO IN (HI)
HORIZONTAL NEEDLE (+)
VERTICAL NEEDLE (+)
RCVR AUDIO OUT (HI)
AUDIO COMMON
PANEL LIGHT (+)
PANEL LIGHTS (-)
FLAGS (+)
SOURCE
VERTICAL NEEDLE (+)
VERTICAL NEEDLE (-)
HORIZ NEEDLE (+)
HORIZ NEEDLE (-)
VERTICAL FLAG (+)
VERTICAL FLAG (-)
HORIZ FLAG (+)
HORIZ FLAG (-)
RCVR NO 1 AUDIO IN
XMTR NO 1 CONTROL
XMTR NO 1 CONTROL
RCVR NO 1 AUDIO IN
HOMER OVER TARGET C
XMIT AUDIO IN (LOW)
RCVR AUDIO OUT (LOW)
PUSH TO TALK
PUSH TO TALK INTERLOCK
+28V DC
+28V DC
+28V DC
COND BAST BAND BB CIPHER
150 TONE CONT GRD
PUSH TO TALK
RCVR AUDIO OUT (HI)
WB RCVR DATA (DISC WB)
XMIT AUDIO IN (HI)
GROUND
GROUND
GROUND
MIC CONTROL A
MIC CONTROL E
AMBIGUITY A
AMBIGUITY B
+28V DC
DC GROUND
HOMER COURSE OUT A
HOMER OVER TARGET D
HOMER COURSE OUT B
HOMER OVER TARGET C
XMIT AUDIO IN (LOW)
RCVR AUDIO OUT (LOW)
RF444A1B
RF445A22
RF433A22
RF446A22
RF447A22
RF448A22
RF447B22
RF449A22
RF451D22
RF458A1BN
RF429C22
RF457A2DN
RF454B
RF454C
RF455A1B
RF454A
RF455A
RF434B
RF434A
RF435B
RF435A
RF436A
RF407D22
RF451C22
RF405E22
RF450E22
RF405D22
RF405C22
RF452C22
RF450G22
RF451C21
RF405B22
RF450E22
RF405022
KY285A2O
KY286A2O
KY280A2O
KY289A2O
KY288A22
KY287A22
KY285B2O
KY286B2O
KY280B2O
KY289B2O
KY288B22
KY287B22
KY288A2O
KY287A2O
KY286A2O
KY281A2O
KY284A2O
KY280A2O
KY289A2O
KY288A22
KY287A22
KY281A22
KY281B2O
KY284B22
KY283B22
KY282B22
KY280B2O
KY281B22
KY281C2O
RF408C22
RF404C22
RF404E22
RF404F22
RF404D22
RF404B22
RF404C22
RF406D22
RF406B22
RF404B22
RF407B22
RF407C22
RF407A22
RF407B22
RF401C22
RF401D22
RF408A22
RF408C22
RF429A22
RF429B22
RF429C22
RF450D22
RF451F22
RF452E22
RF450C22
RF451D22
RF452B22
RF450B22
RF451B22
RF452F22
RF452D22
RF450D22
RF451E22
RF452A22
RF450A22
RF451A22
RF452B22
RF450B22
RF451B22
RF405B22
RF450F20
RF450G20N
RF452B22
RF450B22
RF451B22
RF405B22
RF407D22
RF451C22
RF405E22
RF450E22
RF405D22
RF405C22
RF433C22
RF433E22
RF401B22
RF401C22
RF401D22
RF405B22
RF408A22
RF408C22
RF429A22
RF429B22
RF429C22
RF450D22
RF407D22
RF451C22
RF405E22
RF450E22
RF405D22
RF405C22
KY288A2O
KY287A2O
KY286A2O
KY281A2O
KY289A2ON
J210B P210B
J109 P109
J102 P102
J217 P217
J107 P107
J106 P106
J110 P110
J210A P210A
J210 P210
J210B P210B
J210 P210
J210A P210A
J210B P210B
J210 P210
J210A P210A
J210B P210B
J210 P210
J210A P210A



FO-7. Uhf command facility schematic.

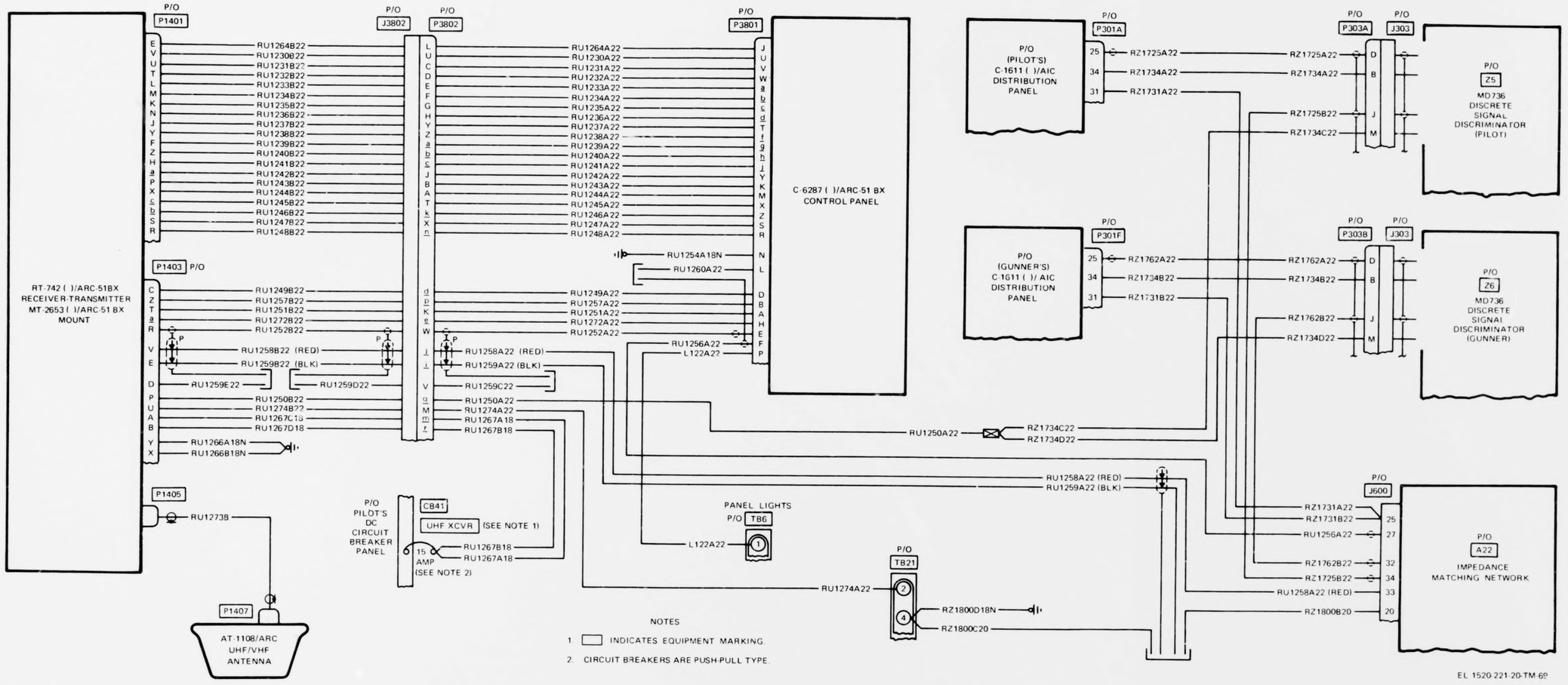
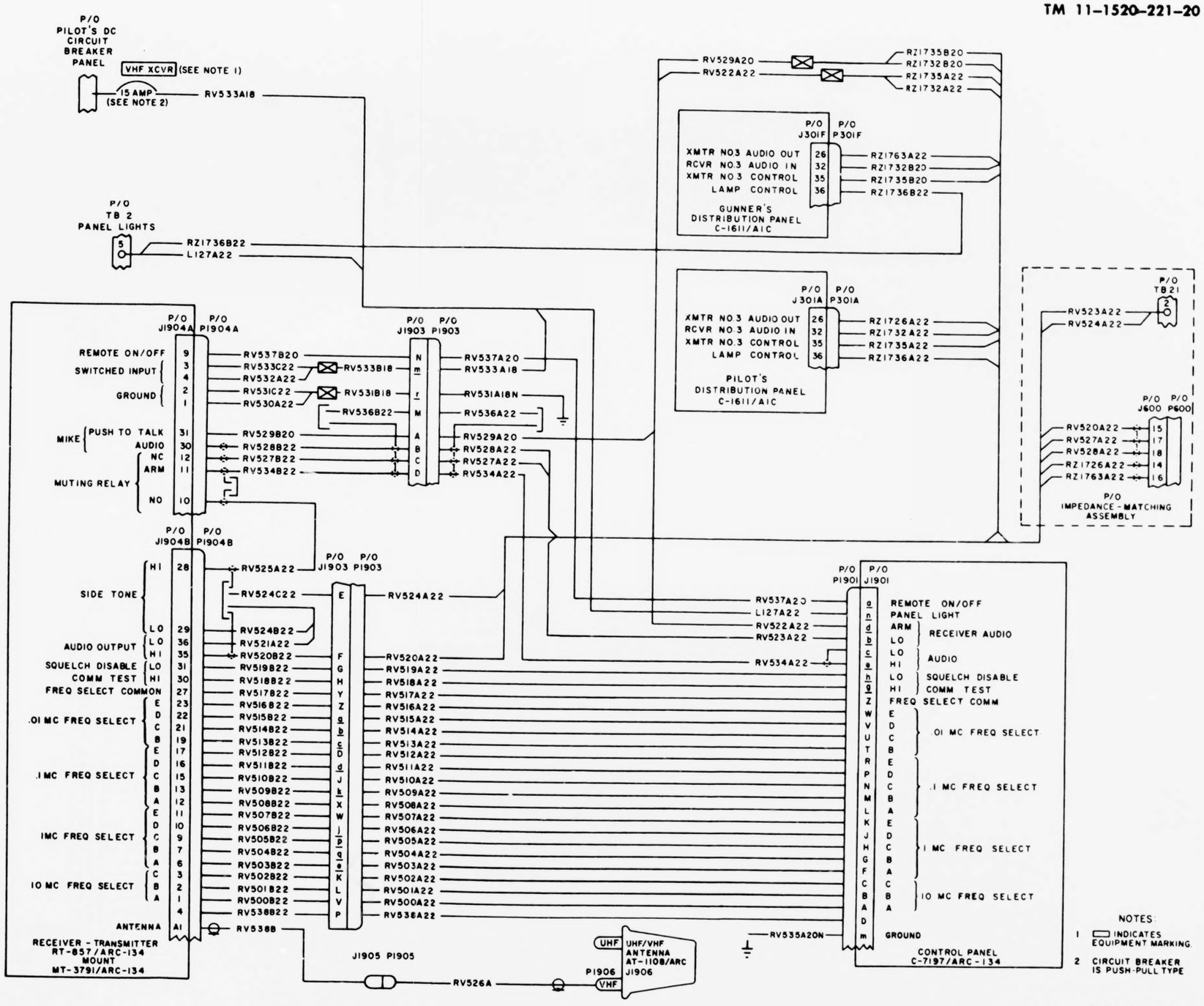
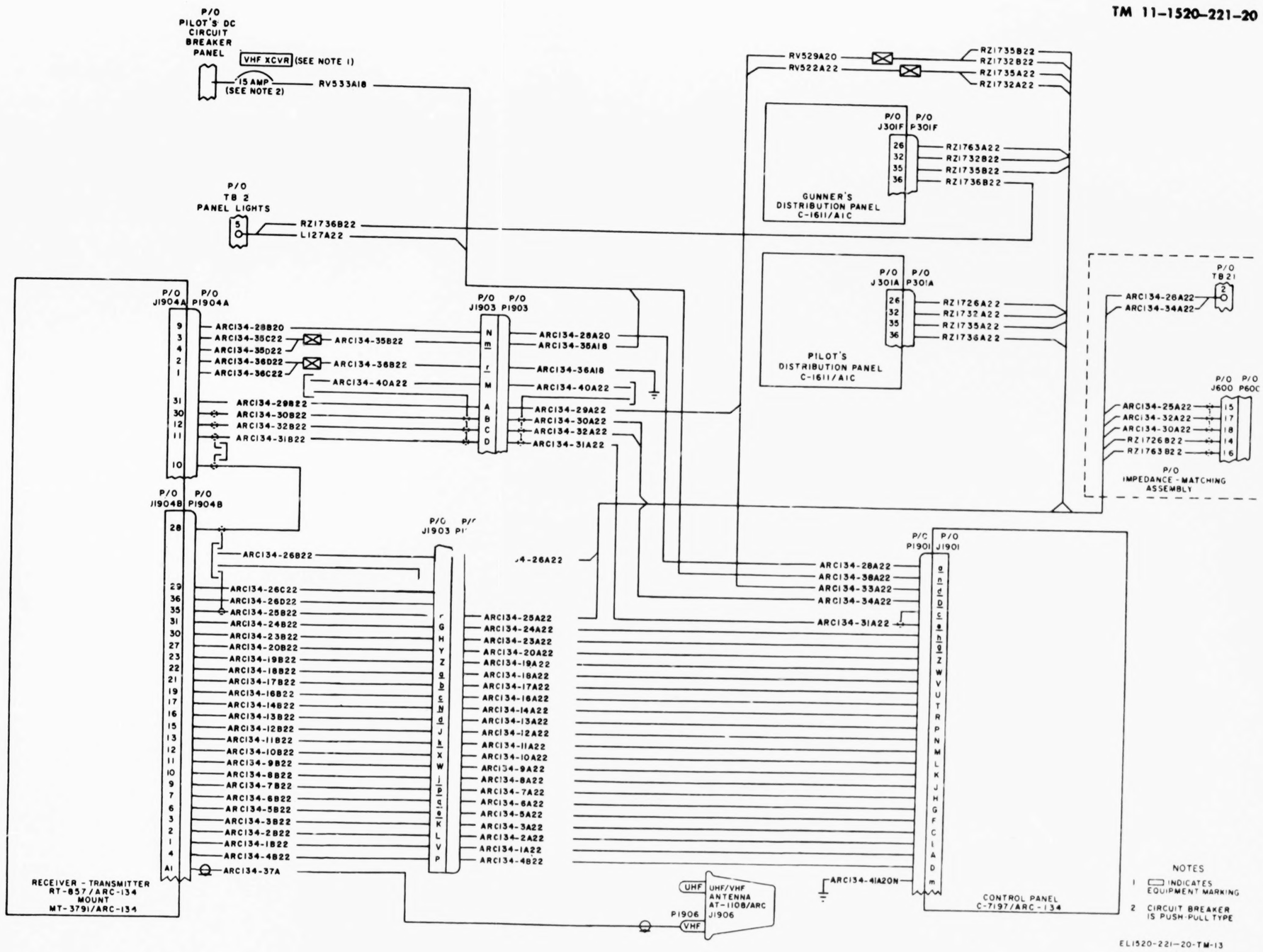


Figure F()-7.1. Uhf command facility, schematic diagram, configuration E. **Change 1**



FO–8. Vhf command facility schematic, configurations A, B, and C.



FO-9. Vhf command facility schematic, configuration D.

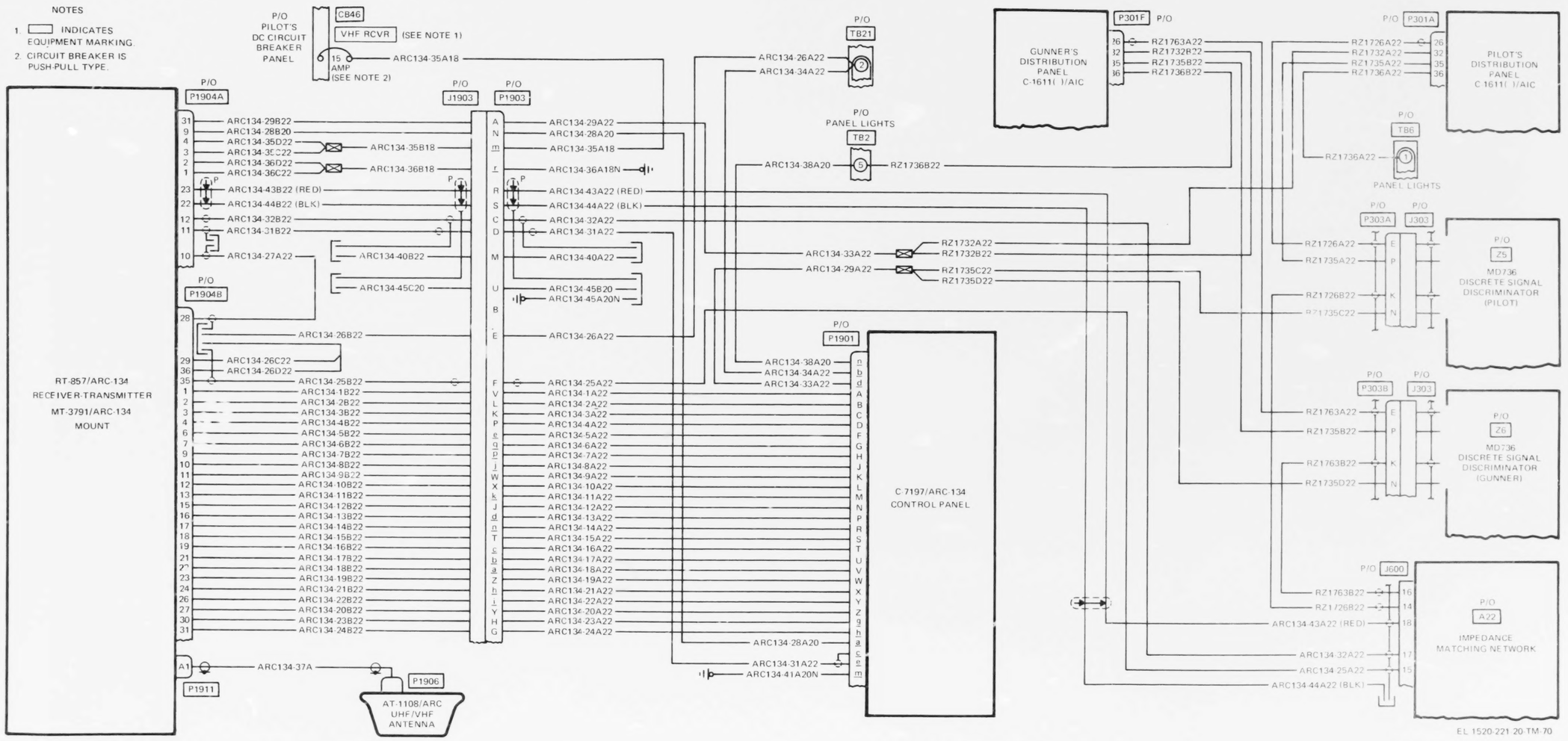
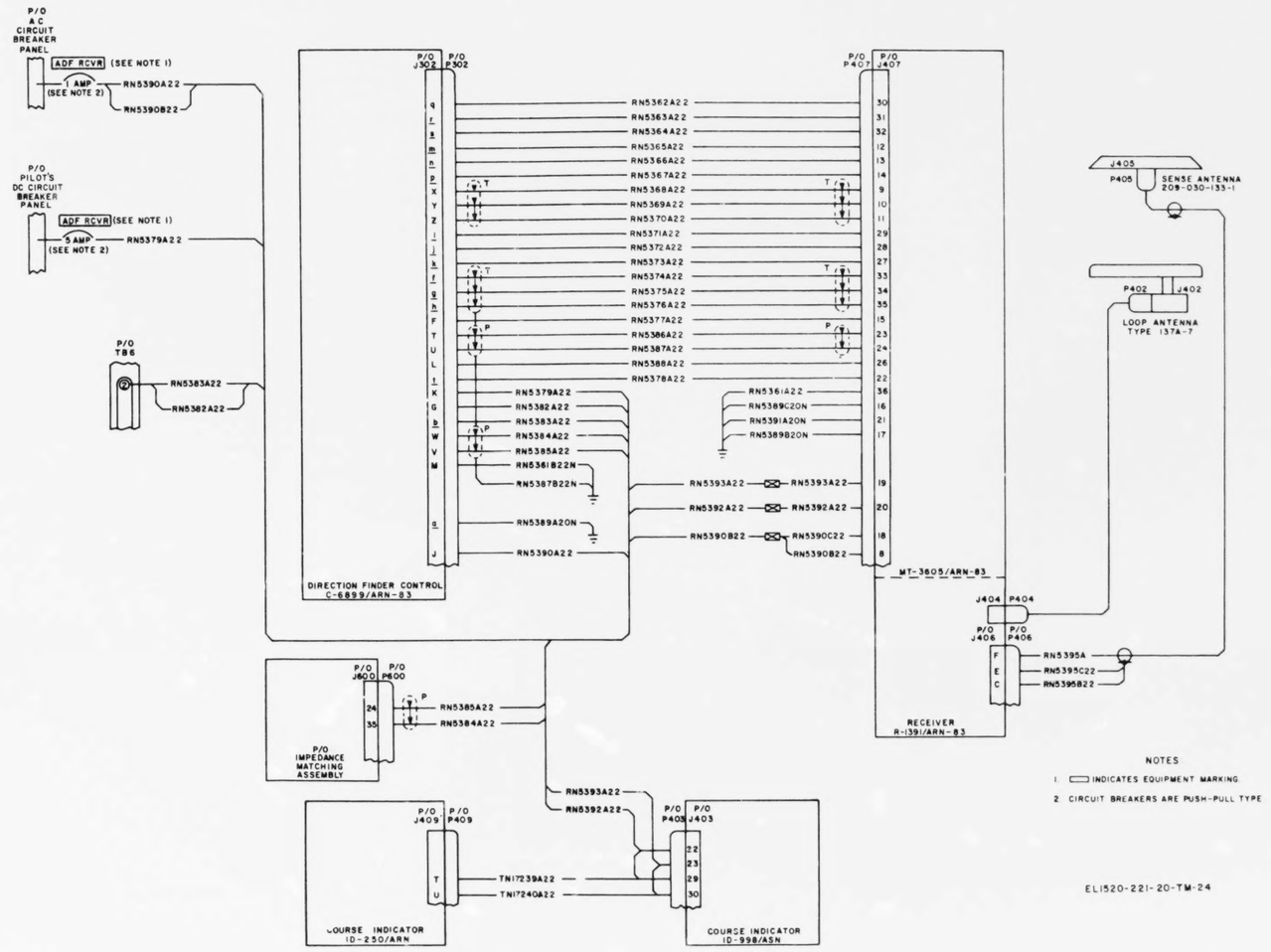
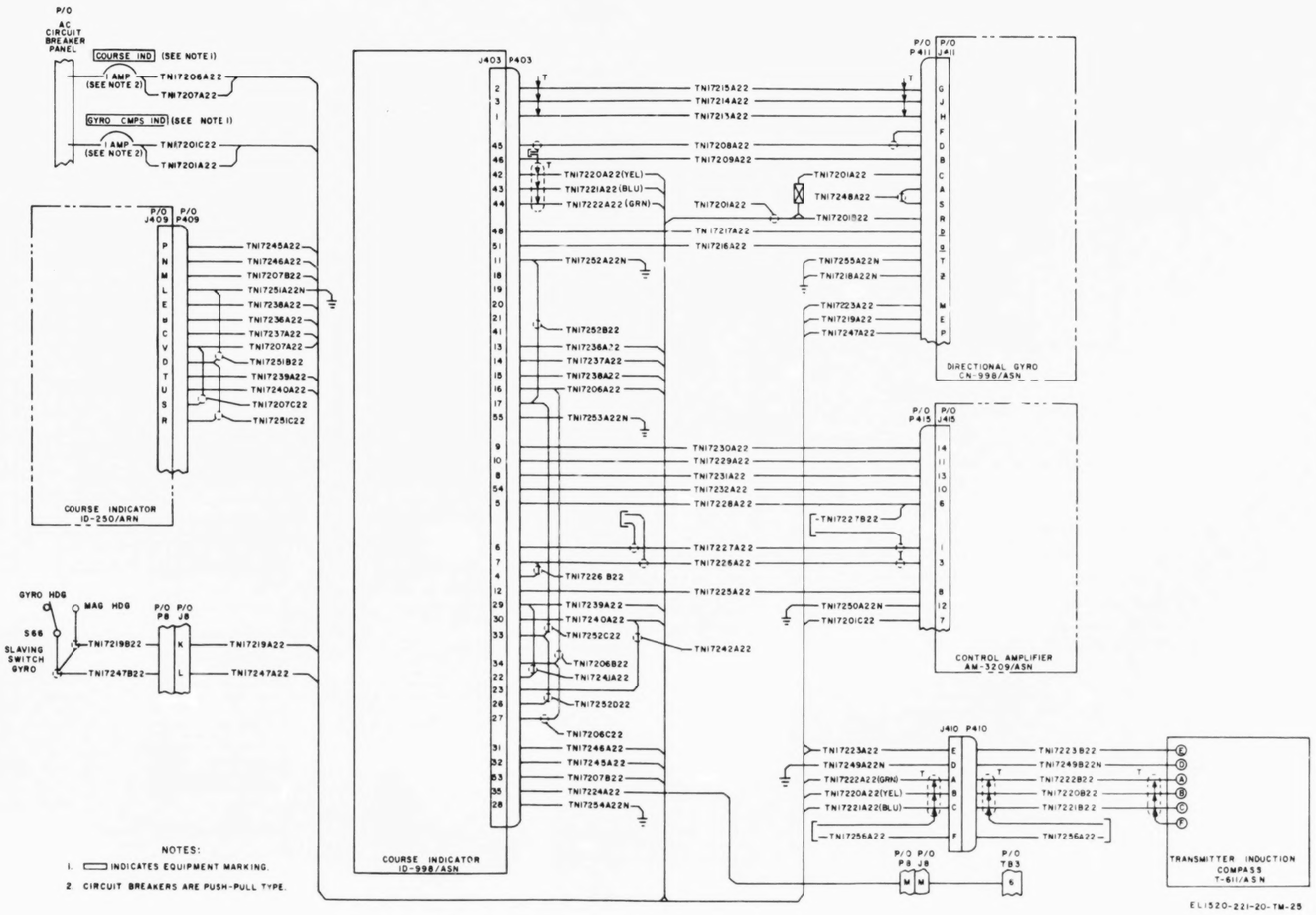


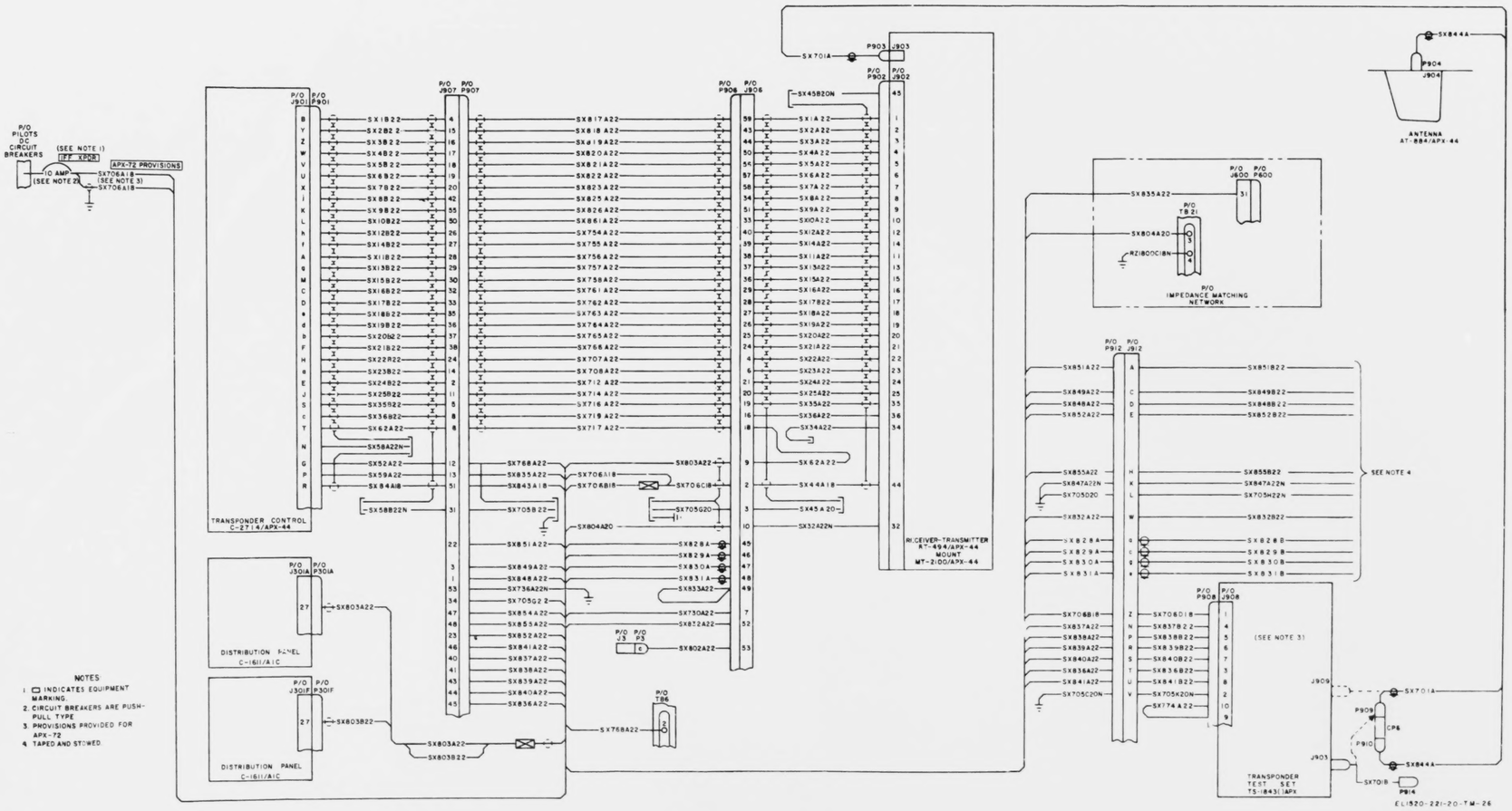
Figure FO-9.1. Vhf command facility, schematic diagram, configuration E. **Change 1**



FO–10. Adf navigation facility schematic.

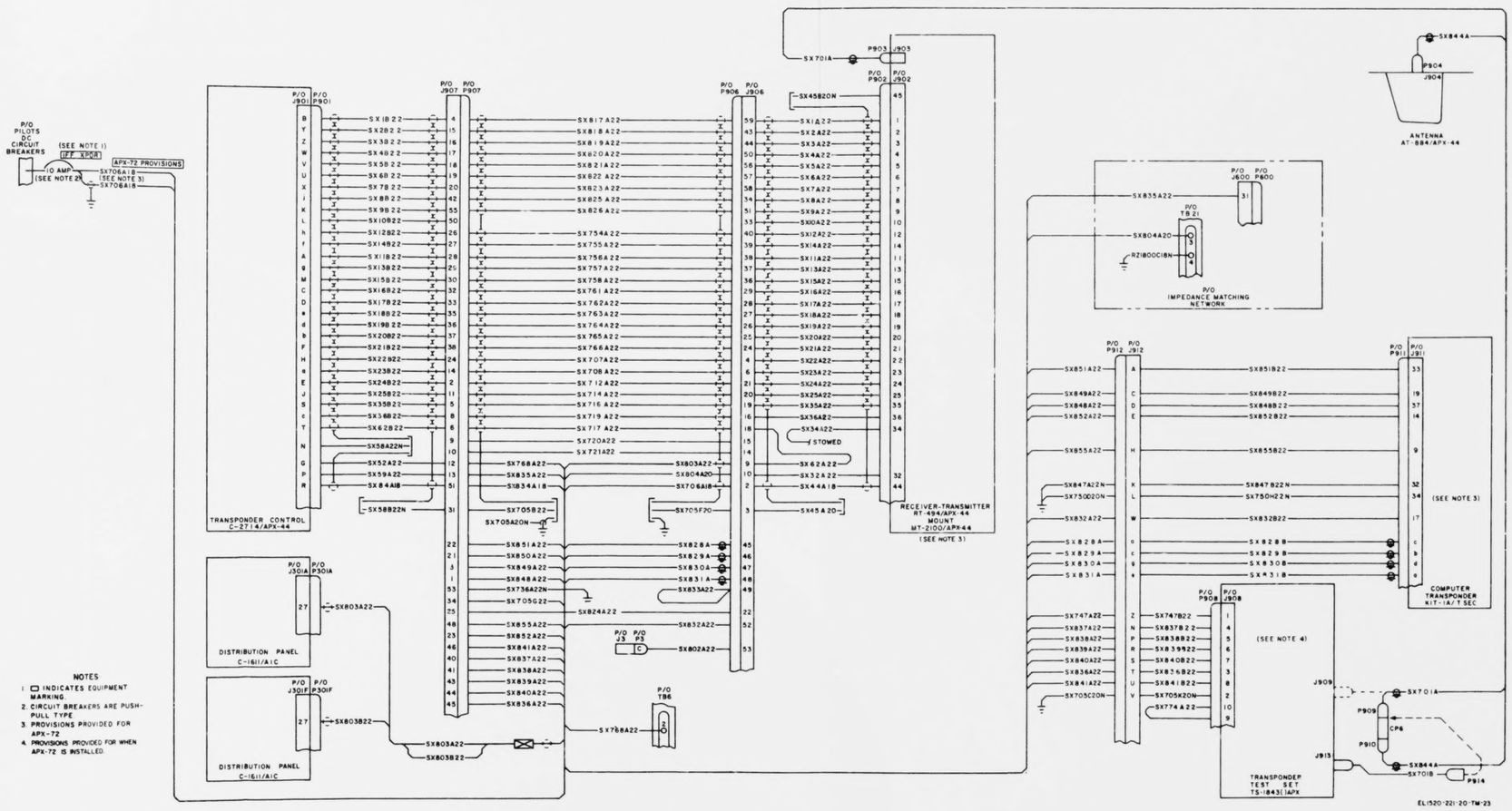


FO–11. Gyromagnetic compass facility schematic.



NOTES:
1. ▭ INDICATES EQUIPMENT MARKING.
2. CIRCUIT BREAKERS ARE PUSH-PULL TYPE.
3. PROVISIONS PROVIDED FOR APX-72.
4. TAPED AND STOWED.

FO-12. Iff transponder facility schematic, configurations A and B.



FO–13. Iff transponder facility schematic, configurations C and D.

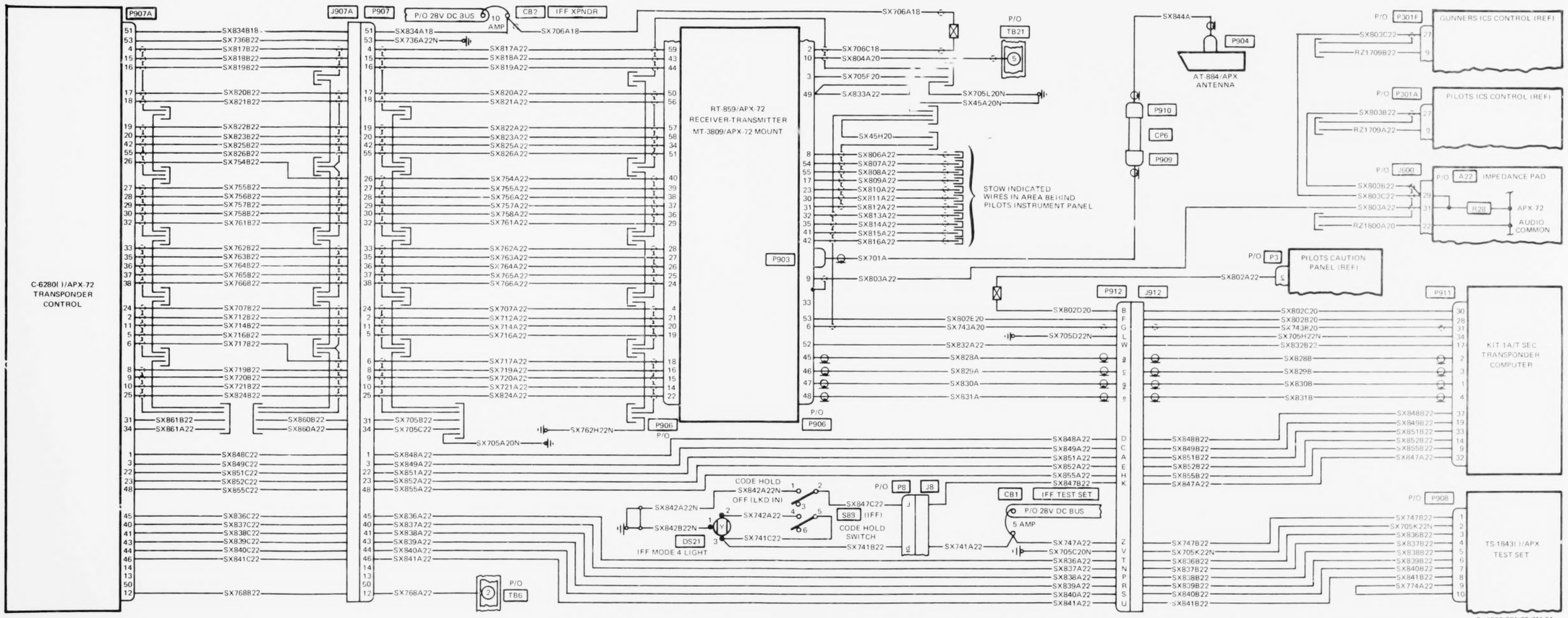


Figure 13-1. Iff transponder facility, schematic diagram, configurations A, B, C, and D (when MWO 55-1520-221-90/13 is accomplished).

Change 1

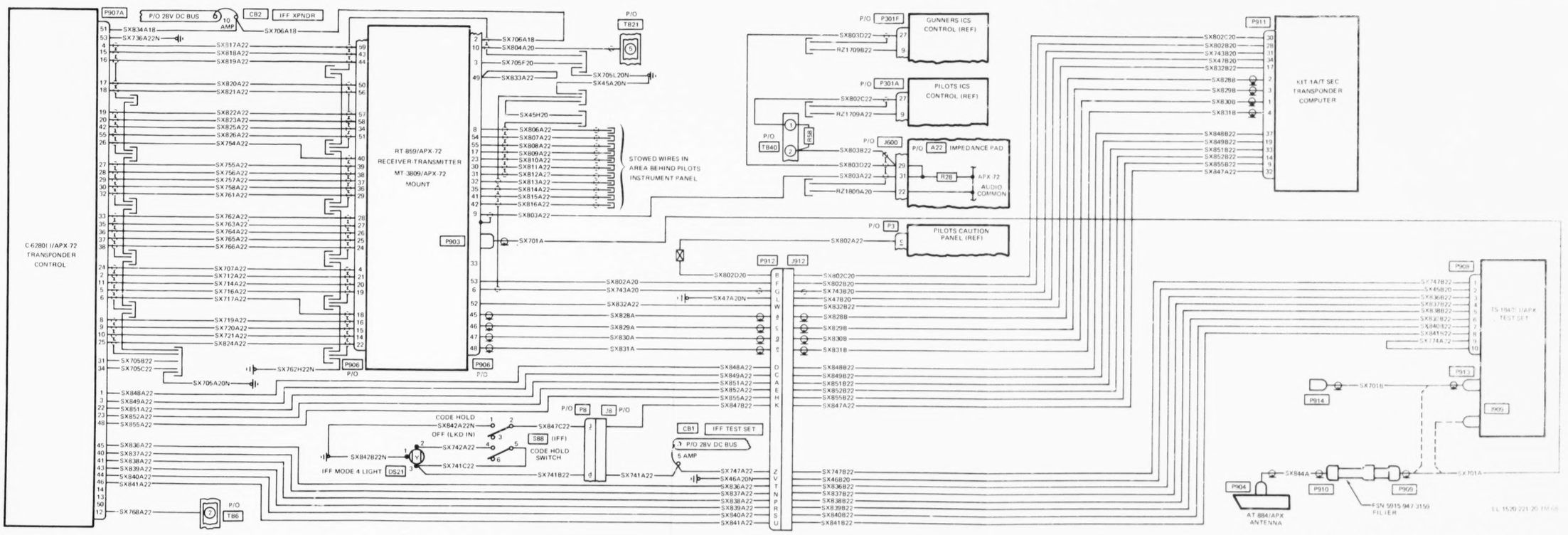
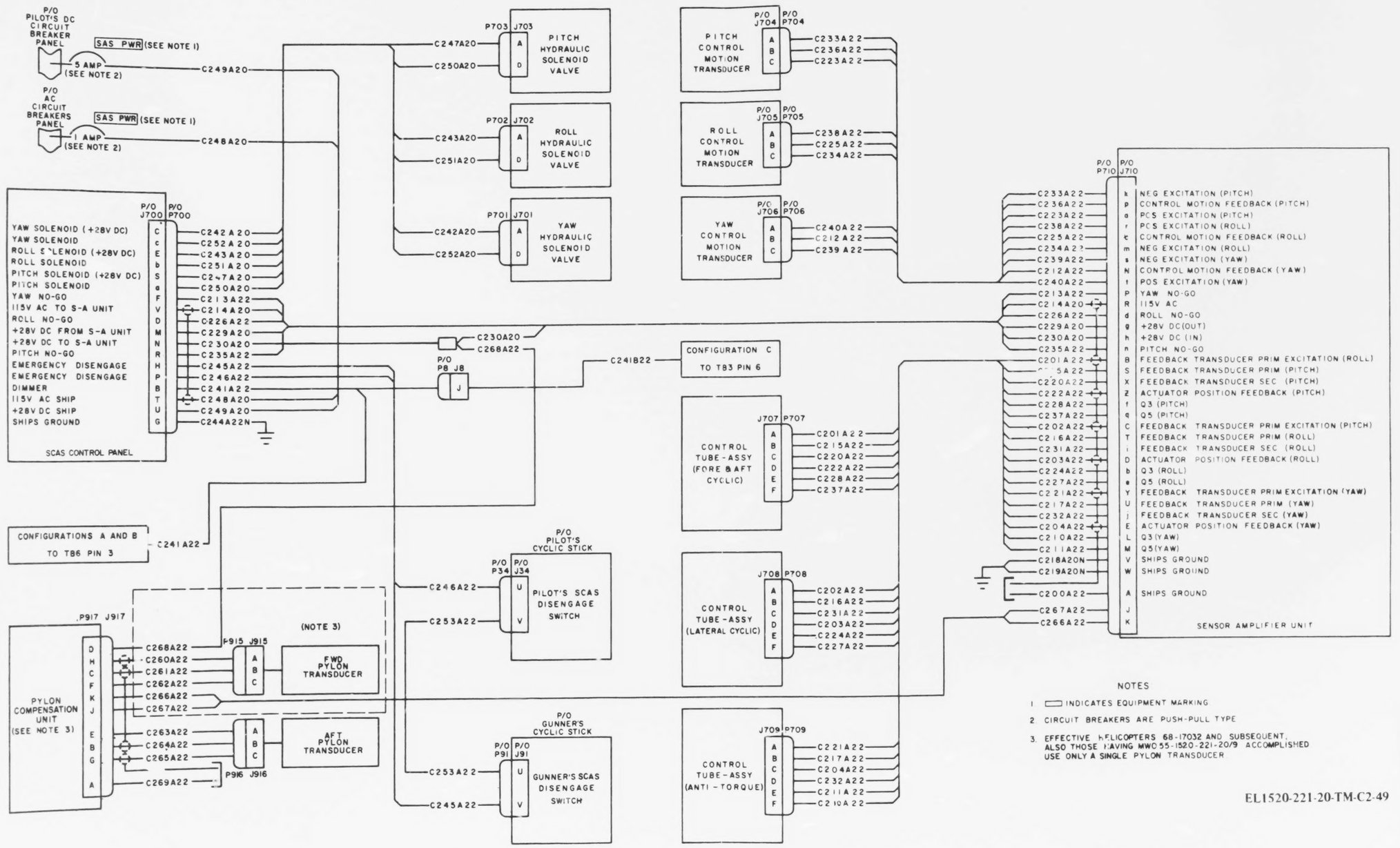
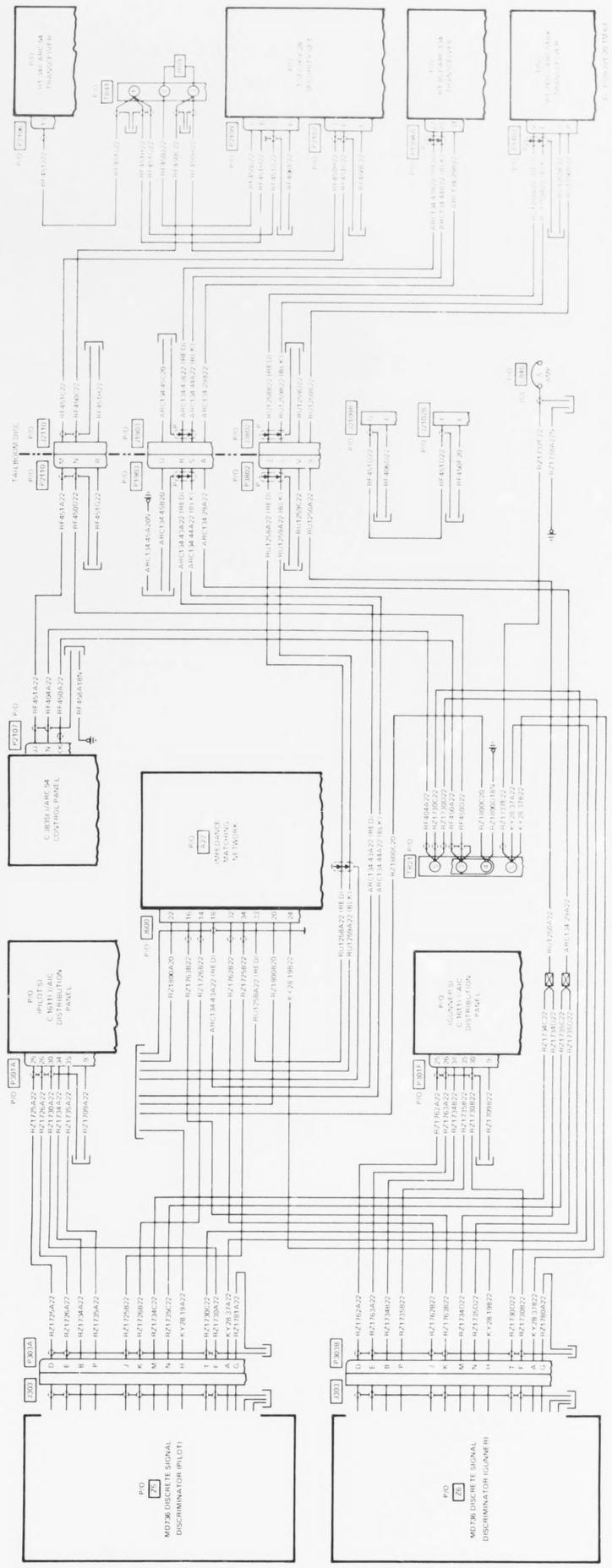


Figure FO-13-2. Iff transponder facility, schematic diagram, configuration E. Change 1



FO-14. Stability and control augmentation system schematic


P/O C 1631(1)A/C-54 CONTROL PANEL
P/O MD736 DISCRETE SIGNAL DISCRIMINATOR (PILOT)
P/O MD736 DISCRETE SIGNAL DISCRIMINATOR (GUNNER)
P/O (PILOT'S) C 1631(1)A/C DISTRIBUTION PANEL
P/O (GUNNER'S) C 1631(1) A/C DISTRIBUTION PANEL
TAILBOOM DISC.

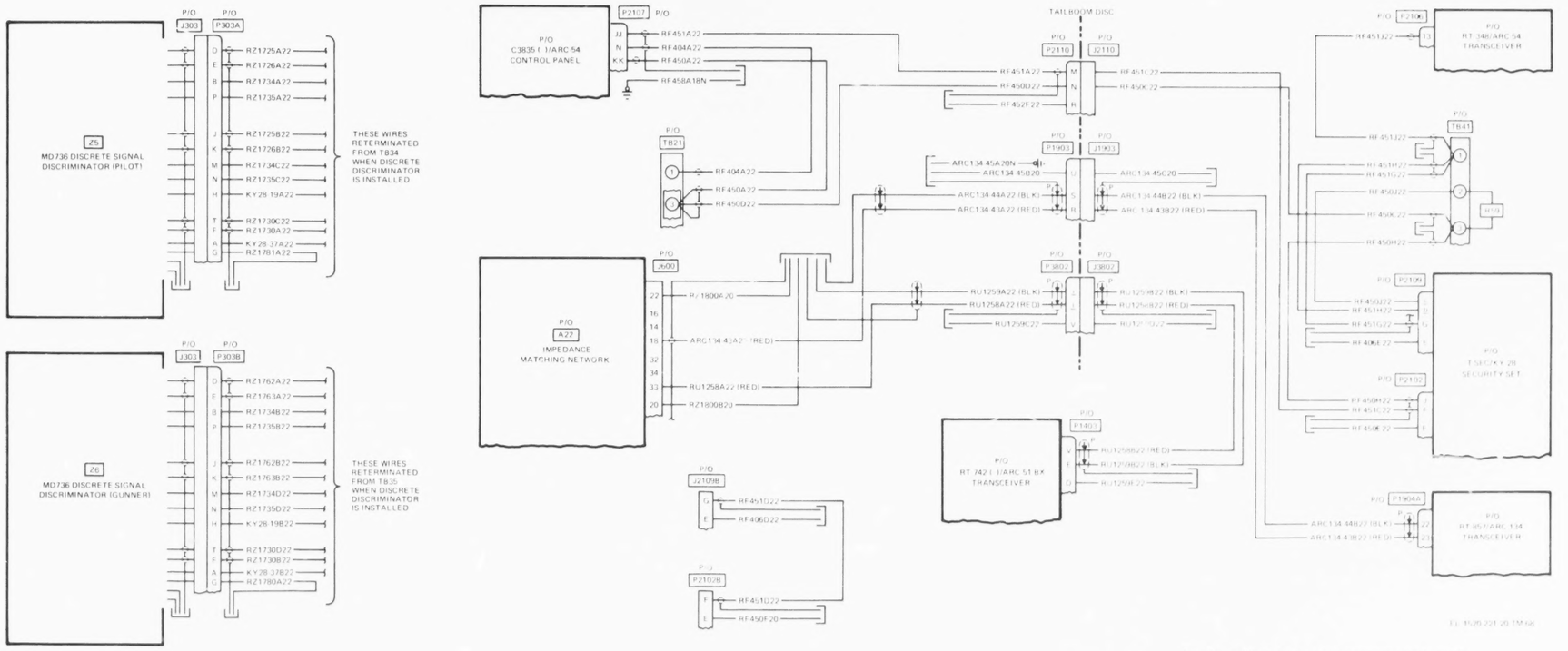
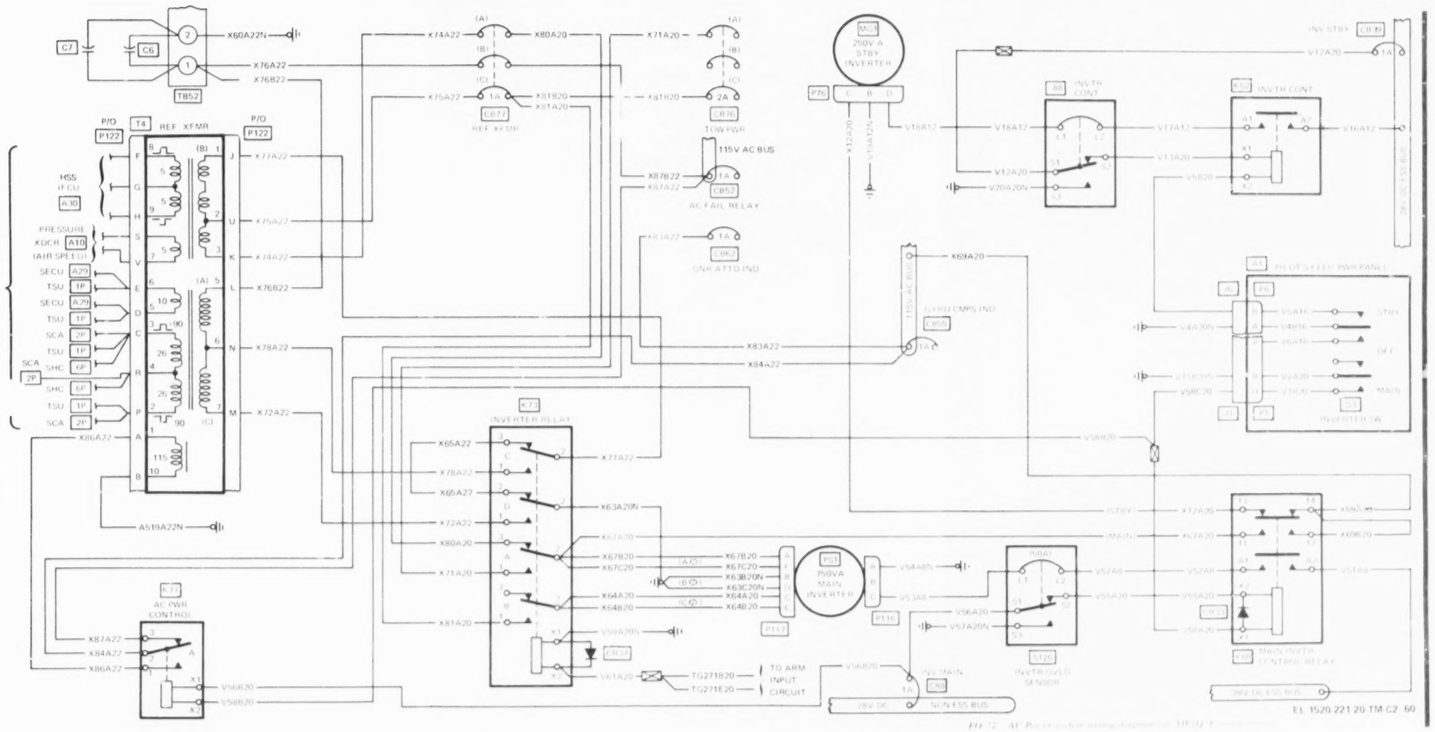


Figure FO-16. KY-28 voice security system provisions, schematic diagram configuration D, per MWO 55-1520-221-3036.

Change 1


SEE ARMAMENT WIRING DIAGRAM
C7
C6
TB52
X60A22N
X76A22
X76B22
P/O P122
T4 REF XFMR
P/O P122
HSS IFCU A30
PRESSURE XDCR A10
AIR SPEED
SECU A29
TSU 1P
SECU A29
TSU 1P
SCA 2P
TSU 1P
SCA 2P
SHC 6P
SHC 6P
TSU 1P
SCA 2P
X86A22
A519A22N
X77A22
X75A22
X74A22
X76B22
X78A22
X72A22
X74A22
X80A20
X75A22
X81B20
X81A20
CB27
REF XFMR
X71A20
X91B20
CB30
TGW PWR
115V AC BUS
X87B22
X87A22
CB52
AC FAIL RELAY
X83A22
CB62
GNR ATTD IND
X69A20
X83A22
X84A22
CB65
GUIDED CMPS IND
K78
INVERTER RELAY
X65A22
X78A22
X65A22
X72A22
X80A20
X71A20
X81A20
X63A20N
X67A20
X67B20
X67C20
X63B20N
X63C20N
X64A20
X64B20
X64B20
X1
V59A20N
CR12
V61A20
TG271B20
TG271E20
TO ARM INPUT CIRCUIT
K77
AC PWR CONTROL
X87A22
X84A22
X86A22
X1
X2
V56B20
V58B20
P/O P113
P/O P116
P/O P117
P/O P118
P/O P119
P/O P120
P/O P121
P/O P122
P/O P123
P/O P124
P/O P125
P/O P126
P/O P127
P/O P128
P/O P129
P/O P130
P/O P131
P/O P132
P/O P133
P/O P134
P/O P135
P/O